Prehospital Protocols and Standing Orders

revised

March, 2006

Joe Holley, MD
Medical Director

INTRODUCTION

- These medical protocols have been established for use by the Medical Director for operation within the State of Tennessee.

- Protocols are treatment guidelines that should only be carried out with direct Medical Control from a physician unless a “standing order” policy has been established for a particular protocol. Standing orders appear before the box captioned “contact medical control” for further orders.

- I have taken great care to make certain that doses of medications and schedules of treatment are compatible with generally accepted standards at the time of publication. Much effort has gone into the development, production, and proof reading of these protocols. Unfortunately this process may allow errors to go unnoticed or treatments may change between the creation of these protocols and their ultimate use. Please do not hesitate to contact me if you discover any errors, typos, dosage, or medication errors.

- Each and every protocol has, as its first directive, the following words: `Maintain universal blood and body fluid precautions.' Universal precautions are within the realm of the hospital environment. Within the prehospital environment, most of prehospital educational doctrine (including the new EMT-B curriculum) suggests that individuals should use "body substance isolation" as a set of much more stringent protective measures than those found in universal precautions.

- Newer defibrillators using biphasic technology require lower energy doses, and self-regulate the appropriate electrical energy. All protocols assume an escalation of applied energy as set by the manufacturer of the device.

- These protocols are for the use of all levels of EMS Providers. Each provider should proceed through the protocol to the maximum allowed by their scope of practice.

I look forward to any questions, concerns, or comments regarding these protocols. Please do not hesitate to contact me at any time. I expect all EMS personnel to follow these guidelines, but also to utilize and exercise good judgment to provide the best care for all our patients.

Joe Holley, MD
Medical Director

ACLS Protocols are based on current American Heart Association® Emergency Cardiac Care Guidelines.

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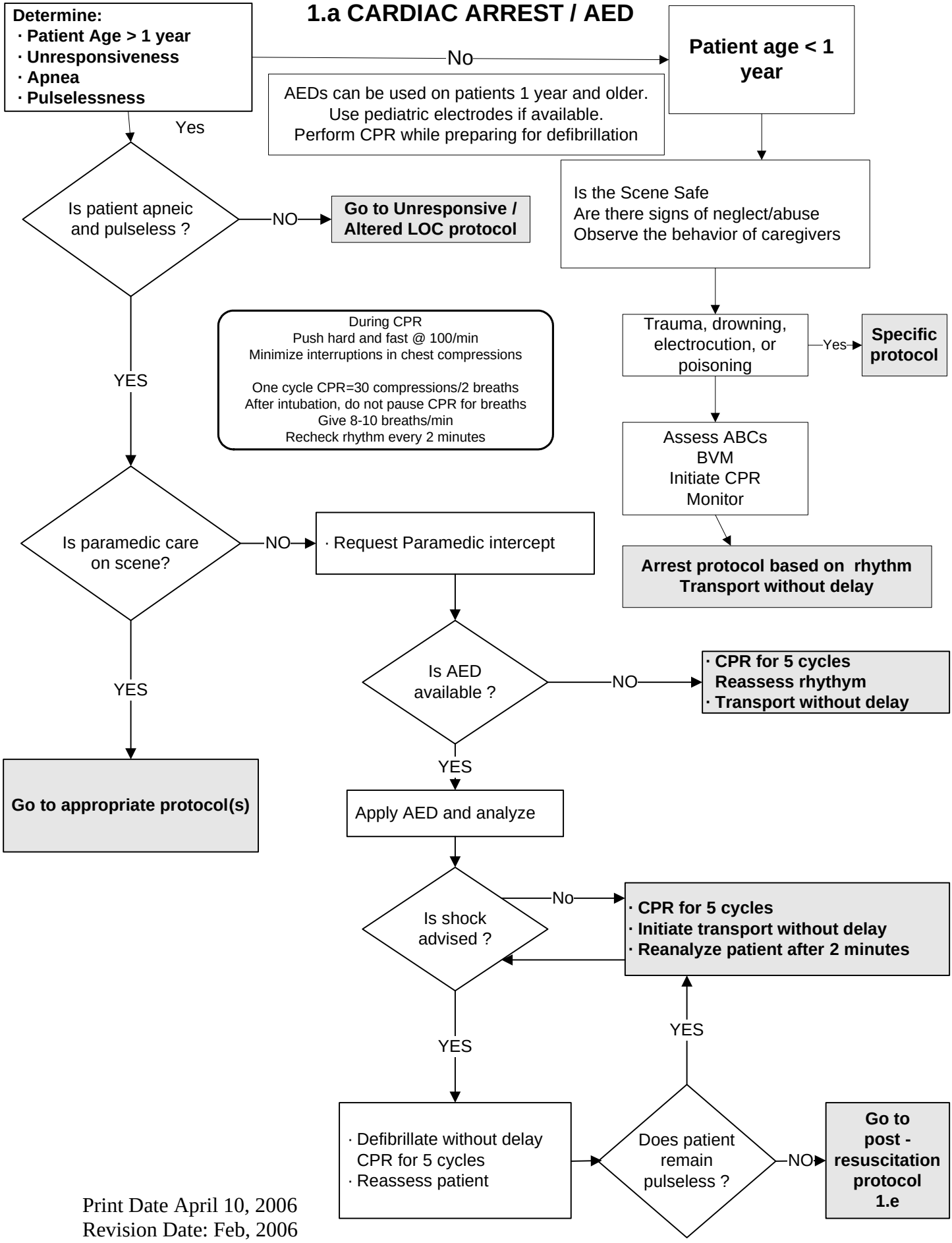
Glossary

EMERGENCY PROTOCOL

1.a CARDIAC ARREST / AED



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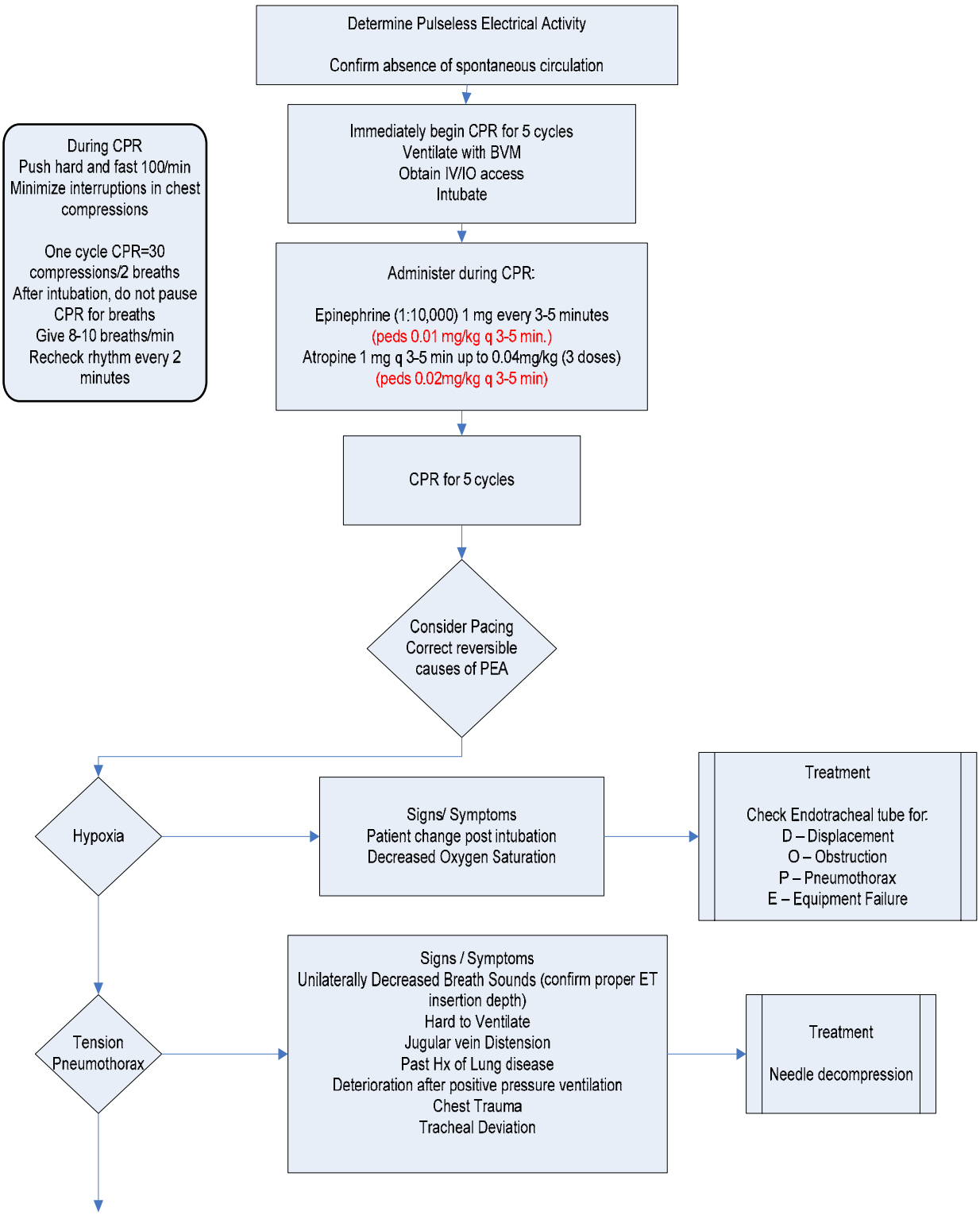
1. B Pulseless Electrical Activity



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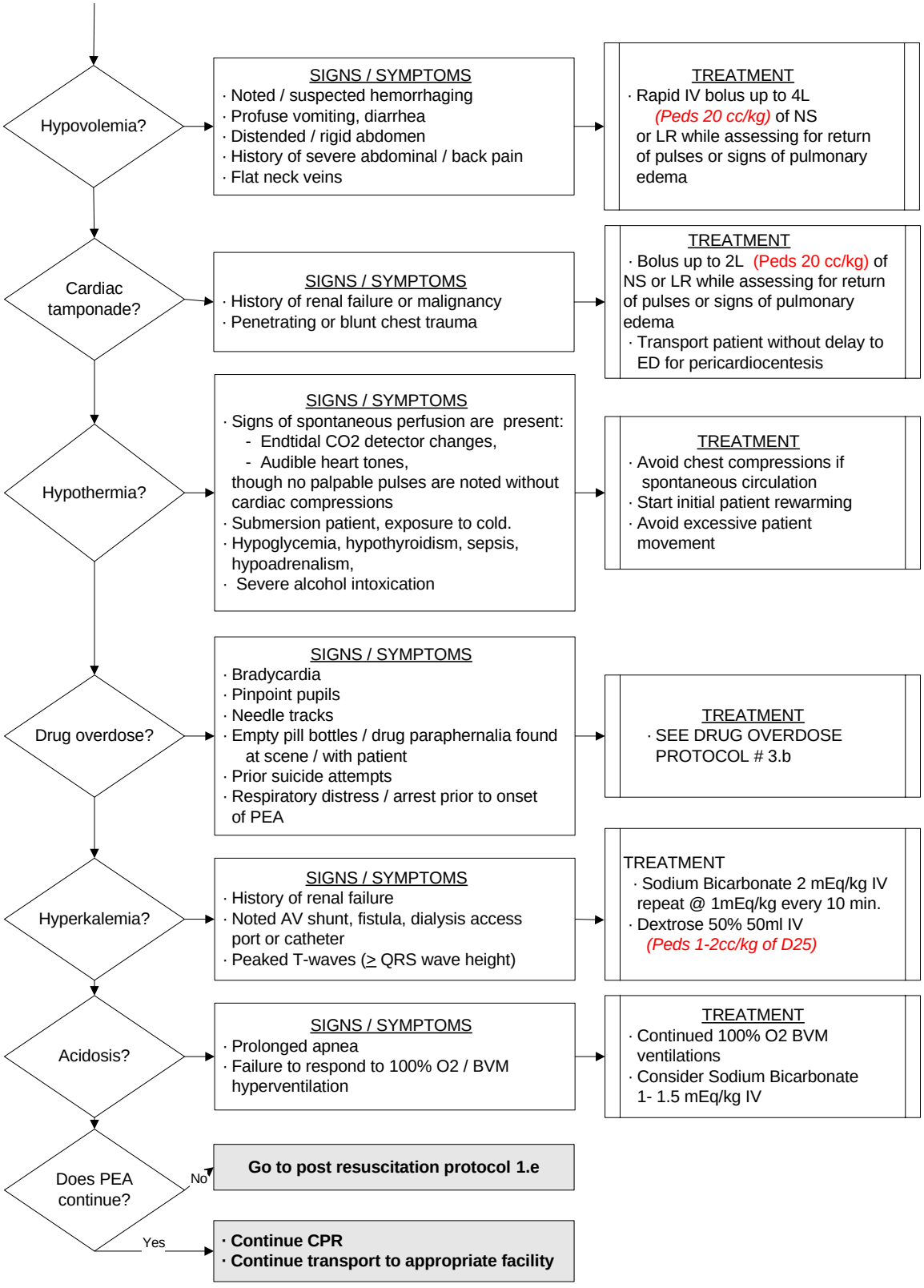
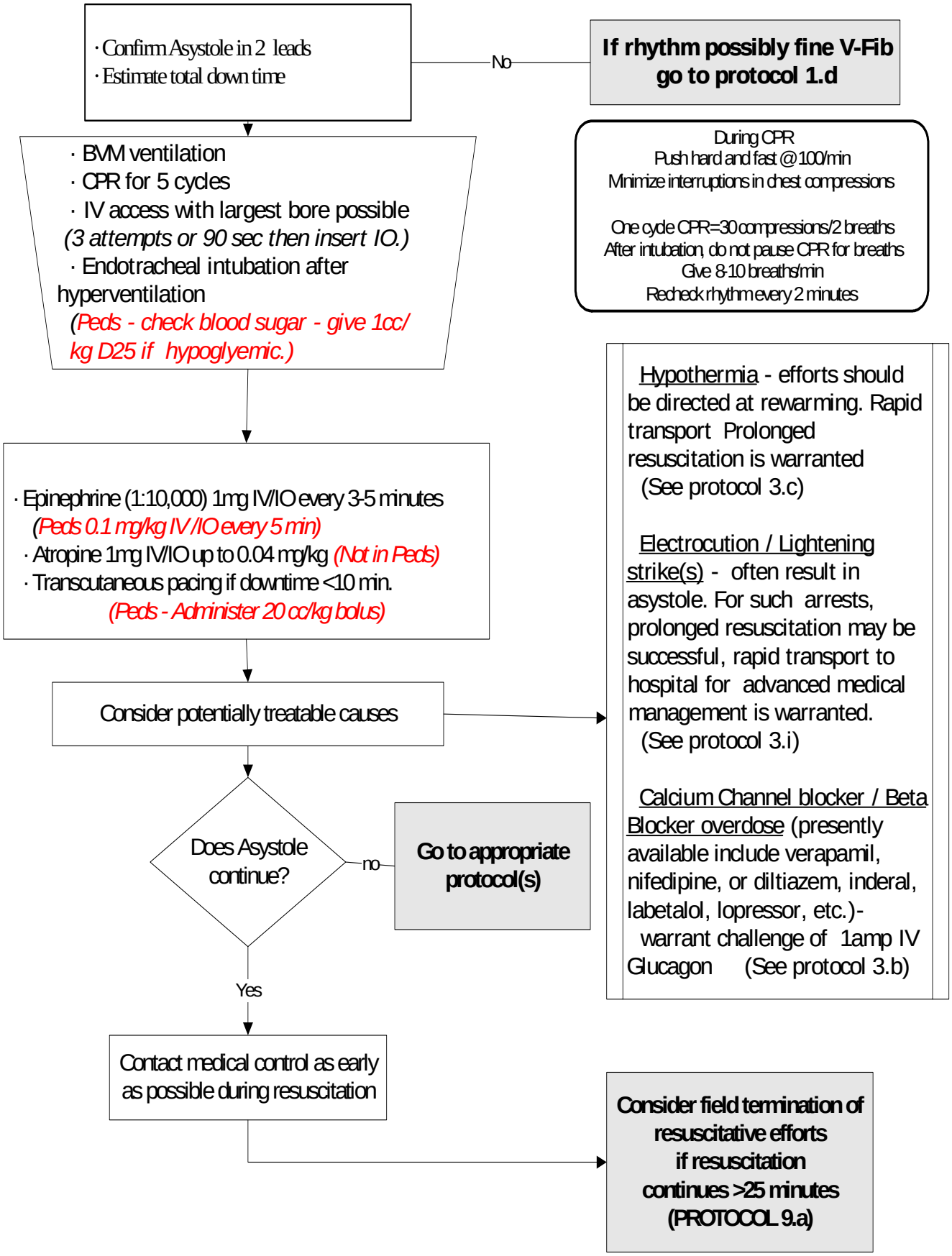
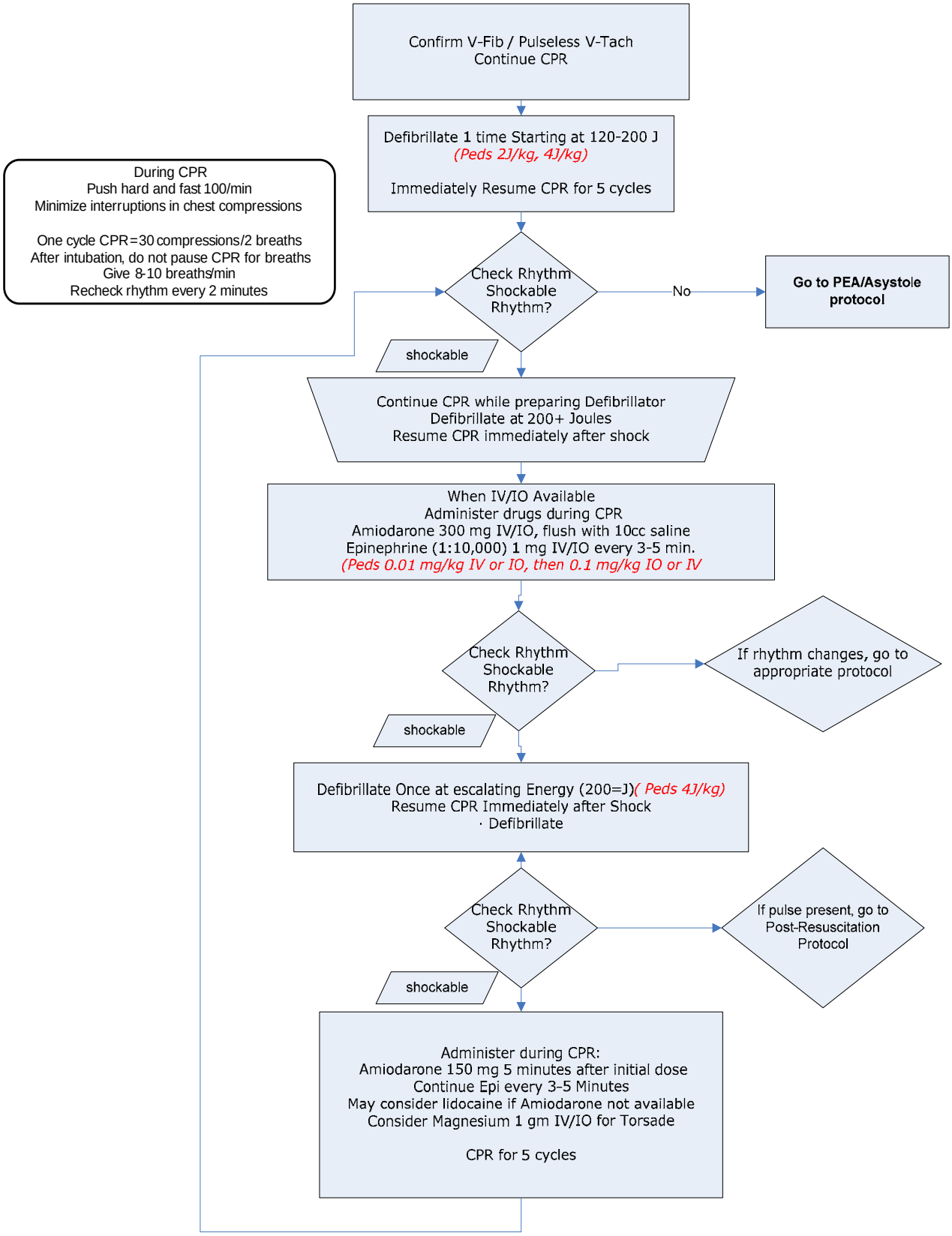

Hypovolemia?
SIGNS / SYMPTOMS
· Noted / suspected hemorrhaging
· Profuse vomiting, diarrhea
· Distended / rigid abdomen
· History of severe abdominal / back pain
· Flat neck veins
TREATMENT
· Rapid IV bolus up to 4L
(Peds 20 cc/kg) of NS
or LR while assessing for return of pulses or signs of pulmonary edema
Cardiac tamponade?
SIGNS / SYMPTOMS
· History of renal failure or malignancy
· Penetrating or blunt chest trauma
TREATMENT
· Bolus up to 2L (Peds 20 cc/kg) of NS or LR while assessing for return of pulses or signs of pulmonary edema
· Transport patient without delay to ED for pericardiocentesis
Hypothermia?
SIGNS / SYMPTOMS
· Signs of spontaneous perfusion are present:
- Endtidal CO2 detector changes,
- Audible heart tones,
though no palpable pulses are noted without cardiac compressions
· Submersion patient, exposure to cold.
· Hypoglycemia, hypothyroidism, sepsis, hypoadrenalism,
· Severe alcohol intoxication
TREATMENT
· Avoid chest compressions if spontaneous circulation
· Start initial patient rewarming
· Avoid excessive patient movement
Drug overdose?
SIGNS / SYMPTOMS
· Bradycardia
· Pinpoint pupils
· Needle tracks
· Empty pill bottles / drug paraphernalia found at scene / with patient
· Prior suicide attempts
· Respiratory distress / arrest prior to onset of PEA
TREATMENT
· SEE DRUG OVERDOSE PROTOCOL # 3.b
Hyperkalemia?
SIGNS / SYMPTOMS
· History of renal failure
· Noted AV shunt, fistula, dialysis access port or catheter
· Peaked T-waves (≥ QRS wave height)
TREATMENT
· Sodium Bicarbonate 2 mEq/kg IV repeat @ 1mEq/kg every 10 min.
· Dextrose 50% 50ml IV
(Peds 1-2cc/kg of D25)
Acidosis?
SIGNS / SYMPTOMS
· Prolonged apnea
· Failure to respond to 100% O2 / BVM hyperventilation
TREATMENT
· Continued 100% O2 BVM ventilations
· Consider Sodium Bicarbonate 1- 1.5 mEq/kg IV
Does PEA continue?
No
Go to post resuscitation protocol 1.e
Yes
· Continue CPR
· Continue transport to appropriate facility

EMERGENCY PROTOCOL
1.c VENTRICULAR ASYSTOLE



1.D Ventricular Fibrillation / Pulseless V-Tach



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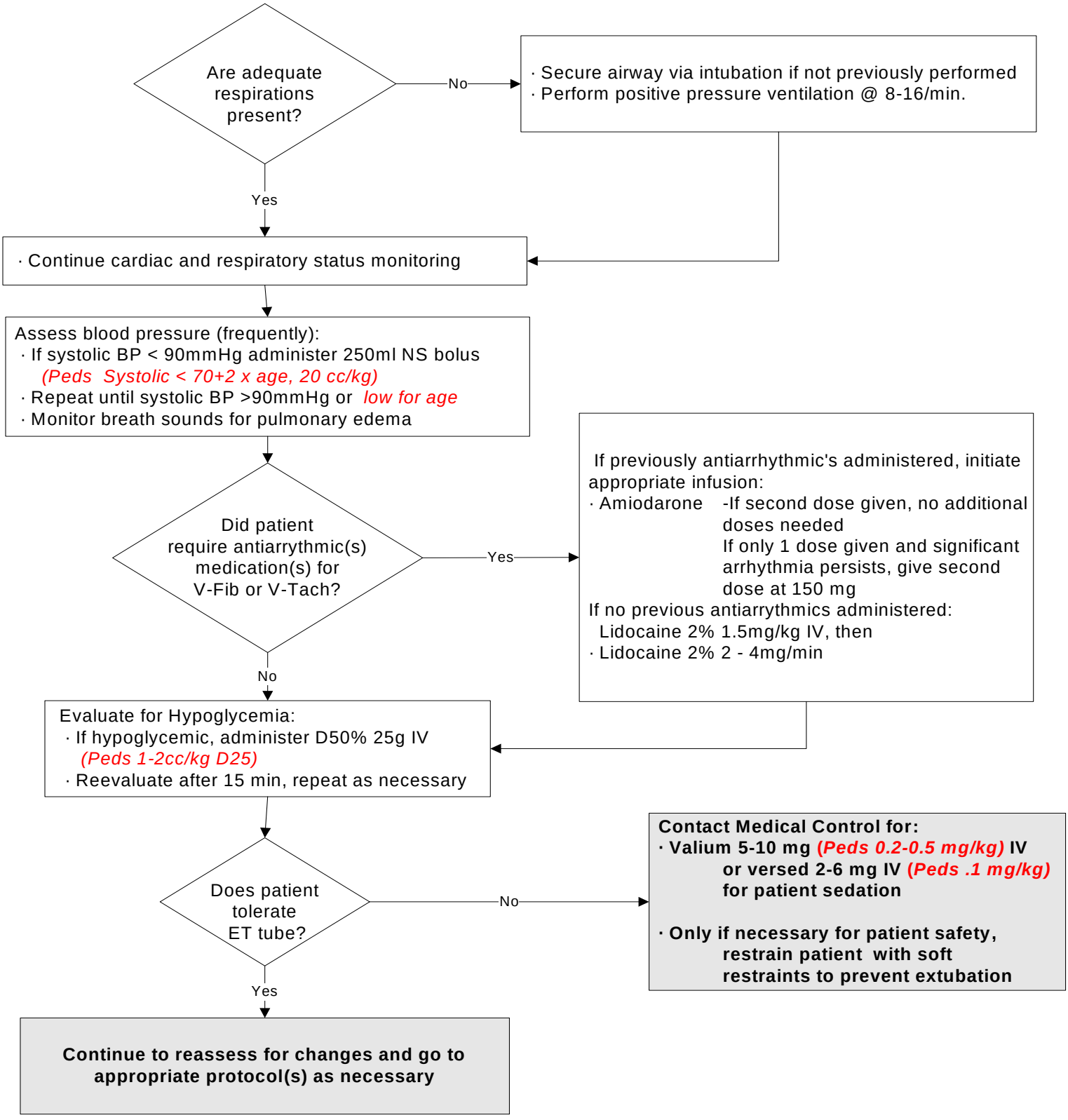
EMERGENCY PROTOCOL
1.e POST RESUSCITATION



EMERGENCY PROTOCOL
1.f NEONATAL RESUSCITATION

Dry the infant quickly and place the infant on a warm towel (if available)
in a face-up position with head lower than the feet.
KEEP THE INFANT AT THE LEVEL OF THE MOTHER'S ABDOMEN UNTIL THE CORD IS CLAMPED!

Suction the infant's oropharynx
1. Insert a bulb syringe or tip of a Suction Device 1-1/2 inches
2. Suction infant's oropharynx.
3. Repeat suctioning if necessary.

Suction the infant's nostrils
1. Insert a bulb syringe or tip of a Suction Device no more than 1/2 inch into nostrils.
2. Suction infant's nostrils.
3. Repeat suctioning if necessary.

SPONTANEOUS RESPIRATIONS?

No

If the infant is not breathing spontaneously
and crying vigorously:
· Stimulate the infant's respirations
· Rub the infant's lower back GENTLY
· Snap the bottom of the feet with index finger GENTLY

If no change or respirations become depressed (less than 20/ minute in newborn):
· Clear the airway by gently suctioning the mouth and nose.
· Stimulate the infant's respirations GENTLY
· Administer high concentration oxygen.

If no change:
· Ventilate at a rate of 30/minute with bag-valve-mask, Insert a proper sized oral airway as needed. Consider ETT.
Assure that the chest rises
· Supplement ventilations with high concentration oxygen.
· Monitor the infant's pulse rate continuously.
· Clamp the umbilical cord with two clamps and cut the cord between them.

· TRANSPORT IMMEDIATELY, keeping the infant warm.
· Obtain and record the vital signs and patient care information,

Yes

a.Clamp the umbilical cord with two clamps and cut the cord between them.
b.Cover the infant's scalp
c. Wrap the infant so it is dry and warm
d. Create an oxygen hood
e. Transport without delay.
f. Obtain and record vital signs and patient care information.

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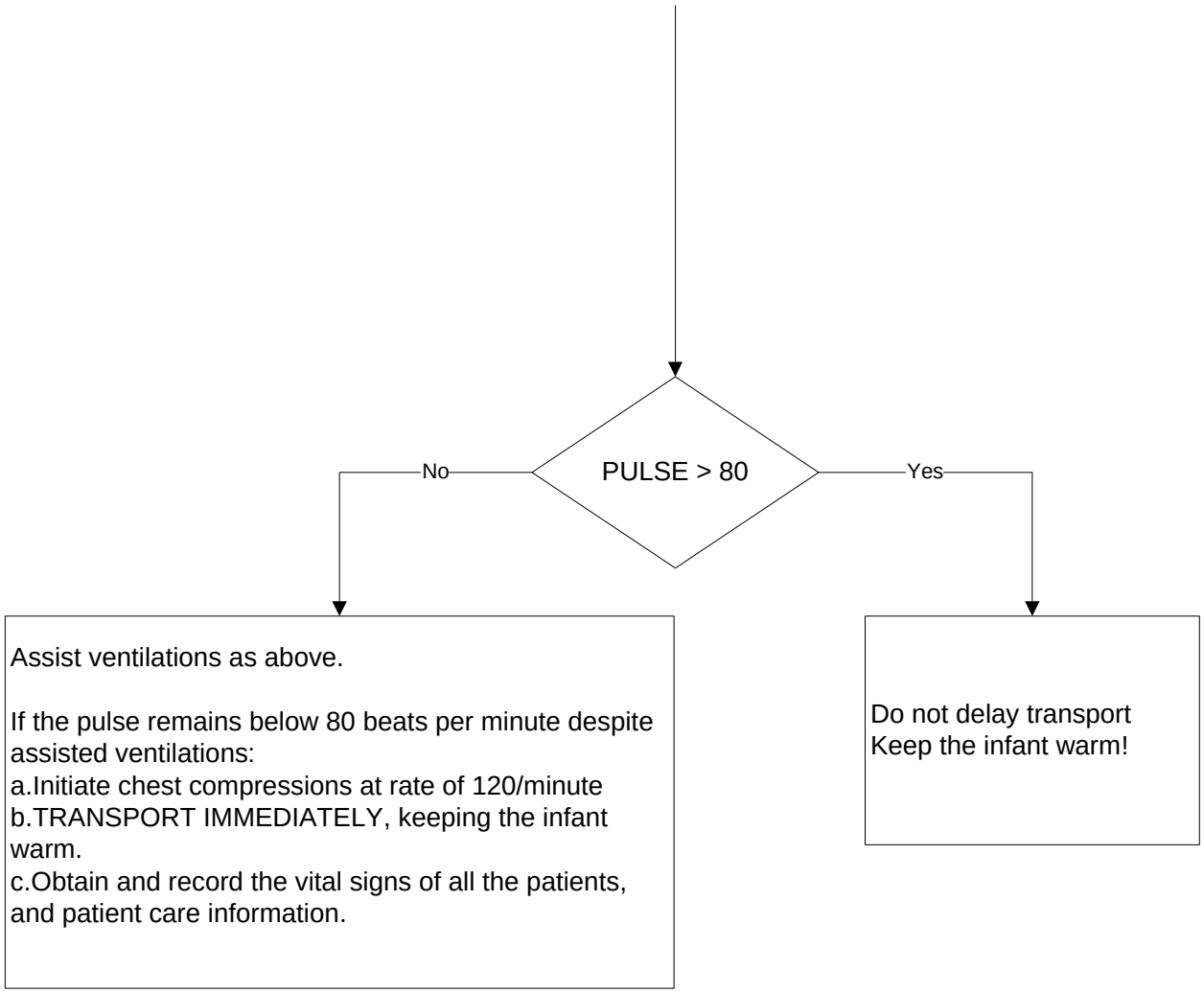
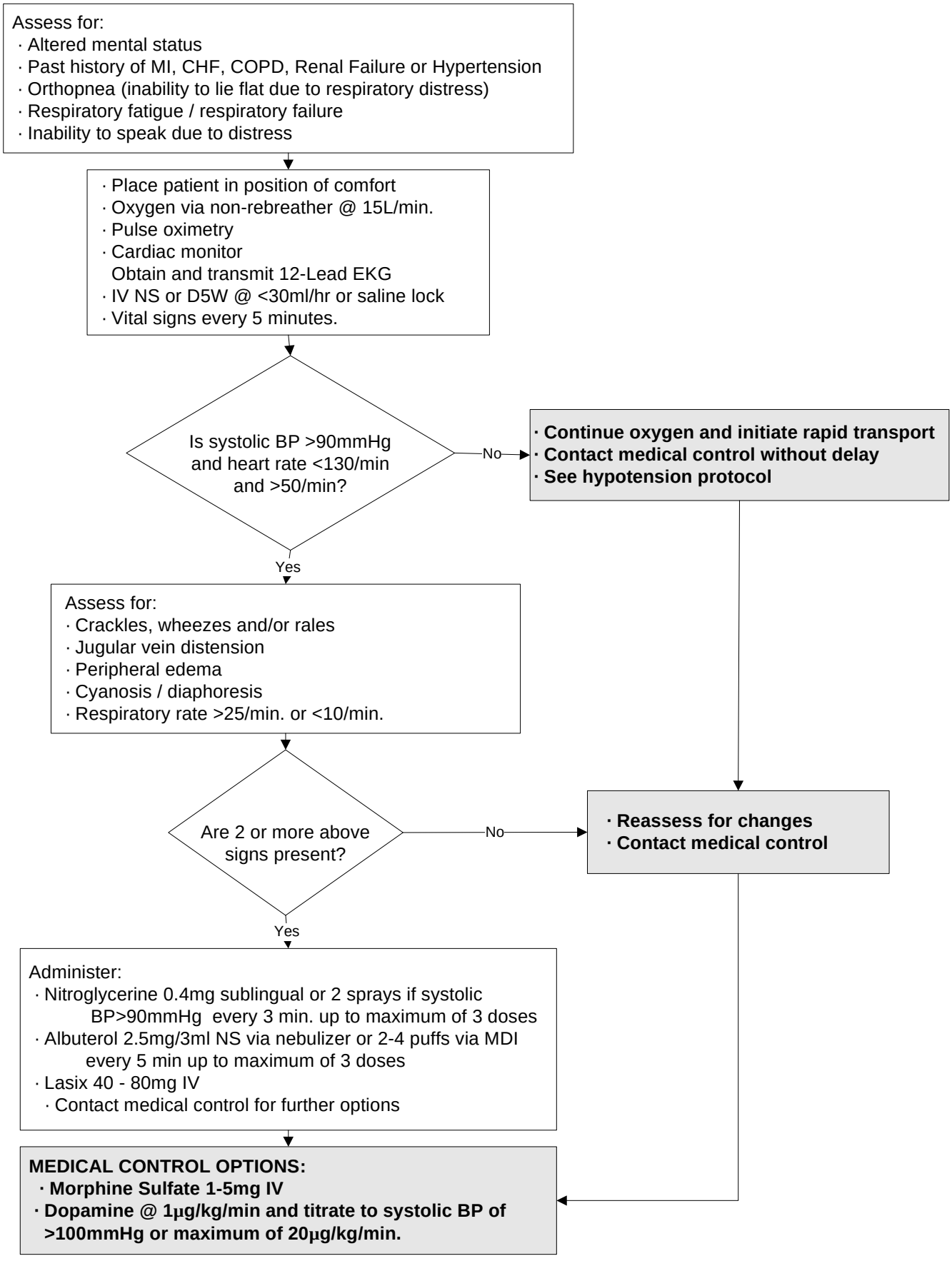

PULSE > 80
No
Yes
Assist ventilations as above.
If the pulse remains below 80 beats per minute despite assisted ventilations:
a.Initiate chest compressions at rate of 120/minute
b.TRANSPORT IMMEDIATELY, keeping the infant warm.
c.Obtain and record the vital signs of all the patients, and patient care information.
Do not delay transport
Keep the infant warm!

EMERGENCY PROTOCOL (Adult only)

2.a CONGESTIVE HEART FAILURE / PULMONARY EDEMA PROTOCOL



EMERGENCY PROTOCOL

2.b RESPIRATORY DISTRESS (Adult A2b, Peds P2a and P2b)

Determine history of:
· COPD, asthma, heart disease and allergies
· Respiratory medications including home nebulizers
· Past hospitalizations, intubations

· Decreased LOC (Usually sign of impending resp. failure)
· Wheezing, decreased breath sounds or no air exchange
· Orthopnea (inability for pt. to lie flat)
· Cyanosis / diaphoresis
· Inability to speak multiple words due to distress
· Respiratory rate <10/min or >25/min
· Signs of pneumothorax (JVD, unilateral breath sounds, sub-cutaneous emphysema)
· Accessory muscle usage / noted tripoding
(Peds - check for airway obstruction)

Airway Obstruction suspected

Consider
Croup
Epiglotitis
Foreign Body

SIGNS/SYMPTOMS
· Inability to lie flat
· Altered mental status/Lethargy/Anxious
· Number of words able to speak consecutively
· Cyanosis / diaphoresis
· Sub-Q emphysema / Unilateral breath sounds
· Fatigue
. Inspiratory strior
· Air Entry
· Increased work of breathing, retractions, nasal flaring

1.Allow the child to select a position of comfort.
2.100 % oxygen, humidified if possible.
3.Attempt to keep the child calm
4. Avoid attempts to suction, finger sweep, or visualize pharynx.
5. If unconscious or apneic, open the airway and begin pocket mask, or bag-valve mask assisted ventilation.
6. Transport without Delay

· Oxygen titrated to patients' level of relief
· Cardiac monitor
· NS IV @ TKO or saline lock
· Consider 12 lead EKG

Does pt. continue with noted distress?

No → **Transport patient without delay and reassess for changes**

Yes

Is heart rate >180/min?

Yes → **· Contact medical control for further orders**
· Reassess patient
· Consider SVT protocol

No

· Albuterol 2.5mg/3ml NS via nebulizer *(Peds 0.03 cc/kg, max 1cc),* or 2-4 puffs via MDI every 5-10 minutes *(Use spacer especially for Peds)* as needed with heart rate <150/min

Is severe distress / wheezing still present?

No → **Transport patient without delay and reassess for changes**

Yes → **· Epinephrine (1:1,000) 0.3-0.5mg SQ**
(Peds 0.01 cc of 1:1000 SQ max 0.3 cc)
Solumedrol 62.5-125 mg IV
(peds 1-2mg/kg)
Contact Medical Control, especially for peds dosing

MEDICAL EMERGENCY

Croup

A. Assessment

History –

Viral infection resulting in inflammation on larynx, trachea
Seasonal – Late fall/early winter
Children under 6 yrs old with cold symptoms for 1-3 days

Hoarseness
Barking, Seal-like cough
Stridor, not wheezes
Low grade fever
No history of obstruction, foreign body, trauma

B. Treatment – Standing Order

1. Oxygen and airway maintenance appropriate to the patients condition

2. Allow patient to assume comfortable position or place patient supine.

3. Nebulized Epinephrine 1: 1000

   1 mg diluted to 2.5-3 cc with saline flush, nebulized (mask or blow-by)

   May repeat up to 3 total doses.

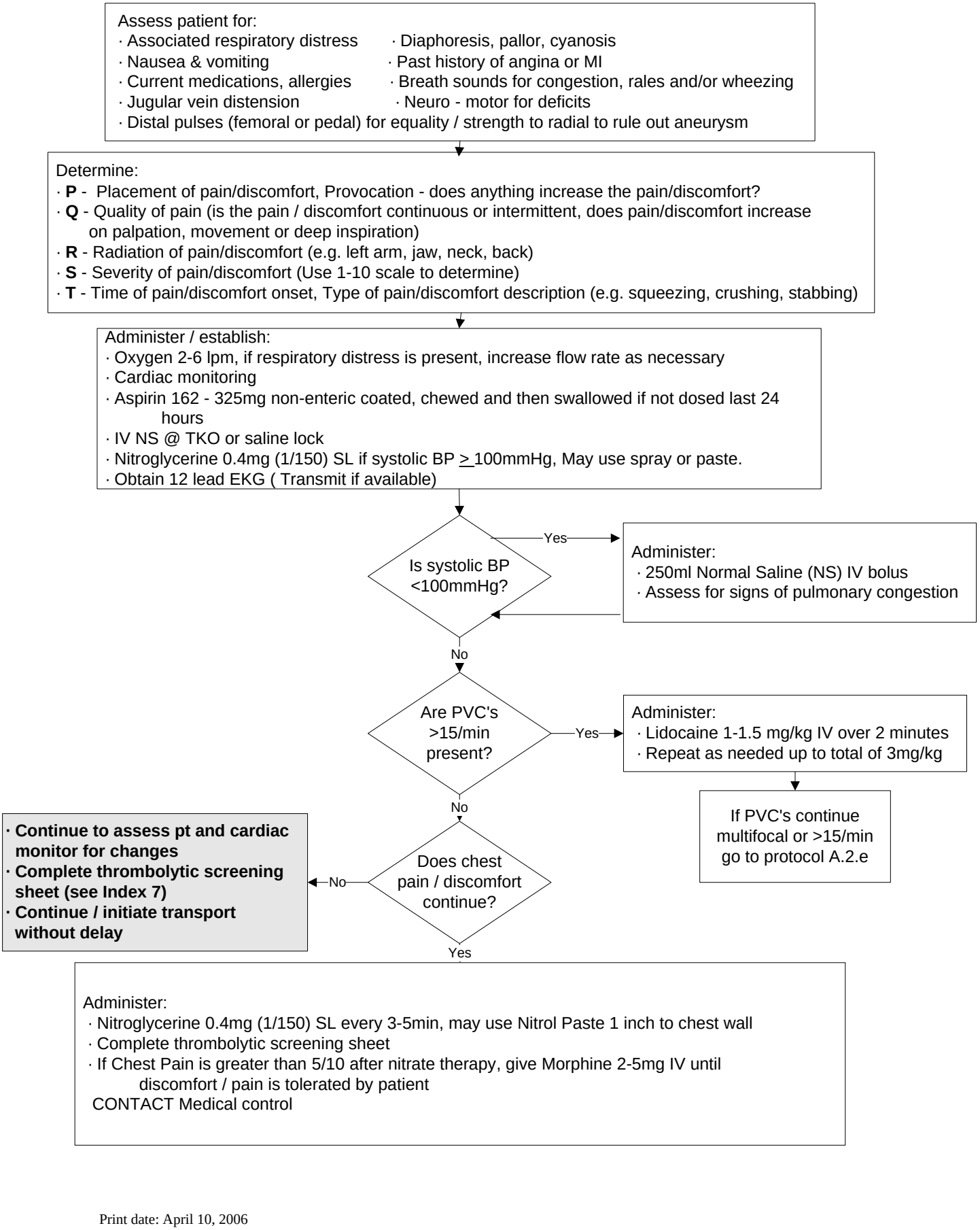
"If the patient has significant distress, a 3 ml (3 mg) may be administered as an initial aerosol. Contact medical control for subsequent aerosols."

C. Side Effects

Tachycardia, tremor, vomiting

EMERGENCY PROTOCOL (Adult only)

2.c SYMPTOMATIC CHEST PAIN



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EMERGENCY PROTOCOL (Adult only)
2.d HYPERTENSIVE CRISIS

Assess for:
- Decreased / altered level of consciousness (LOC)
- Respiratory distress, tachypnea, pulmonary edema
- Cardiac dysrhytmia
- Blood pressure for Systolic >220mmhg or diastolic >120mmHg
- Headache, blurred vision, dizziness, weakness
- Neurological deficits such as decreased motor, sensory and pulses, facial palsy, paralysis, paresis, ataxia, aphasia, dyspagia, dysarthria
- Nausea & vomiting
- Nosebleed (Epistaxis)

Administer / establish:
- Oxygen, pulse oximetery
- Cardiac monitoring for dysrhythmias
- IV NS @ TKO or saline lock
- Glucose, if glucose <80mg/dl administer 50ml D50%W and reassess

Are motor / neuro deficits present?

Yes

· Continue to assess for changes
· Go to protocol A.4.a

No

Is diastolic BP < 120mmHg?

Yes

· Contact medical control without delay
· Continue to monitor for patient changes
· Complete thrombolytic screening sheet if possible

No

Administer:
- Nitroglycerine 0.4mg SL every 1-2 minutes or / until noted decrease in original BP by >15%

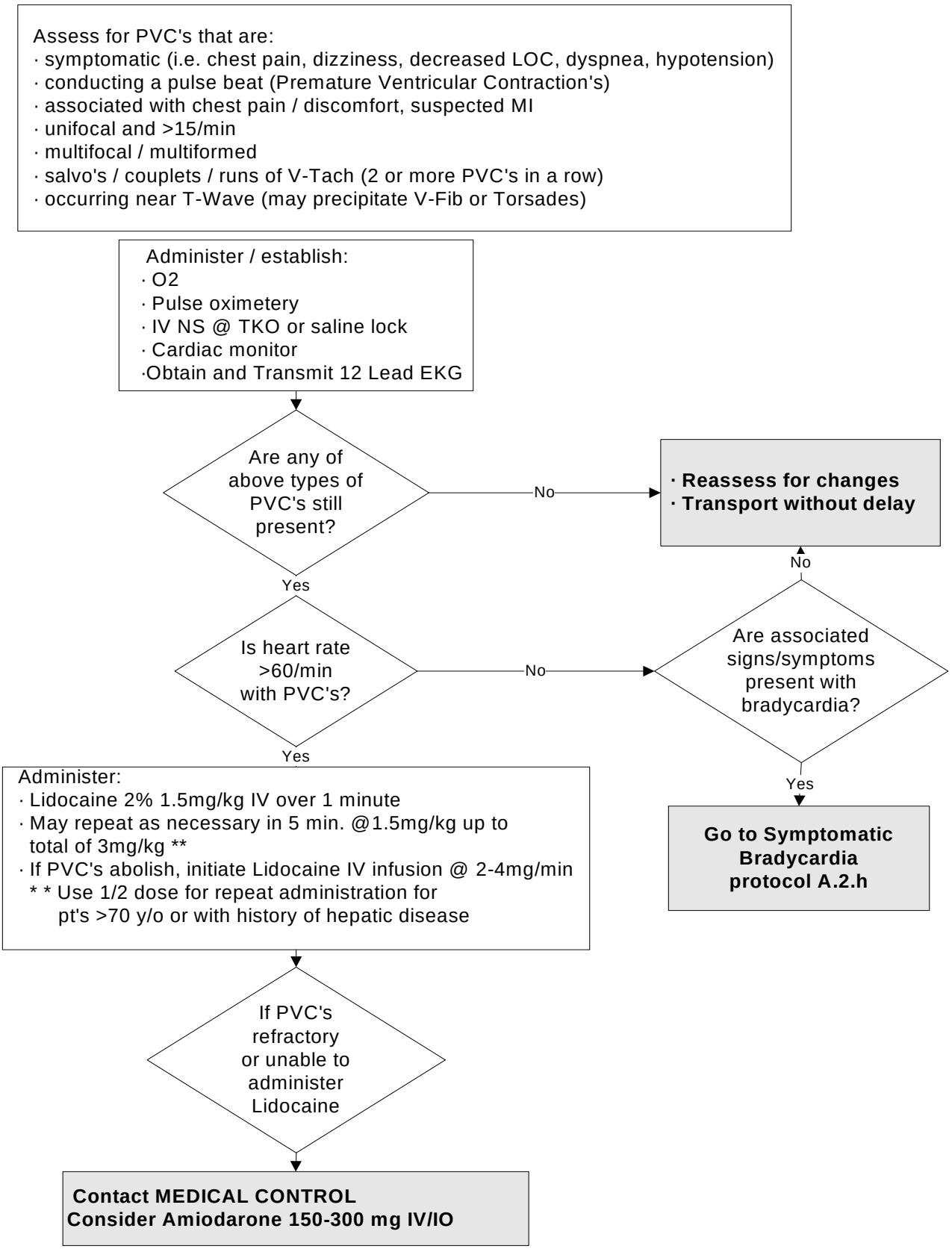
Is diastolic BP > 120mmHg?

No

Yes

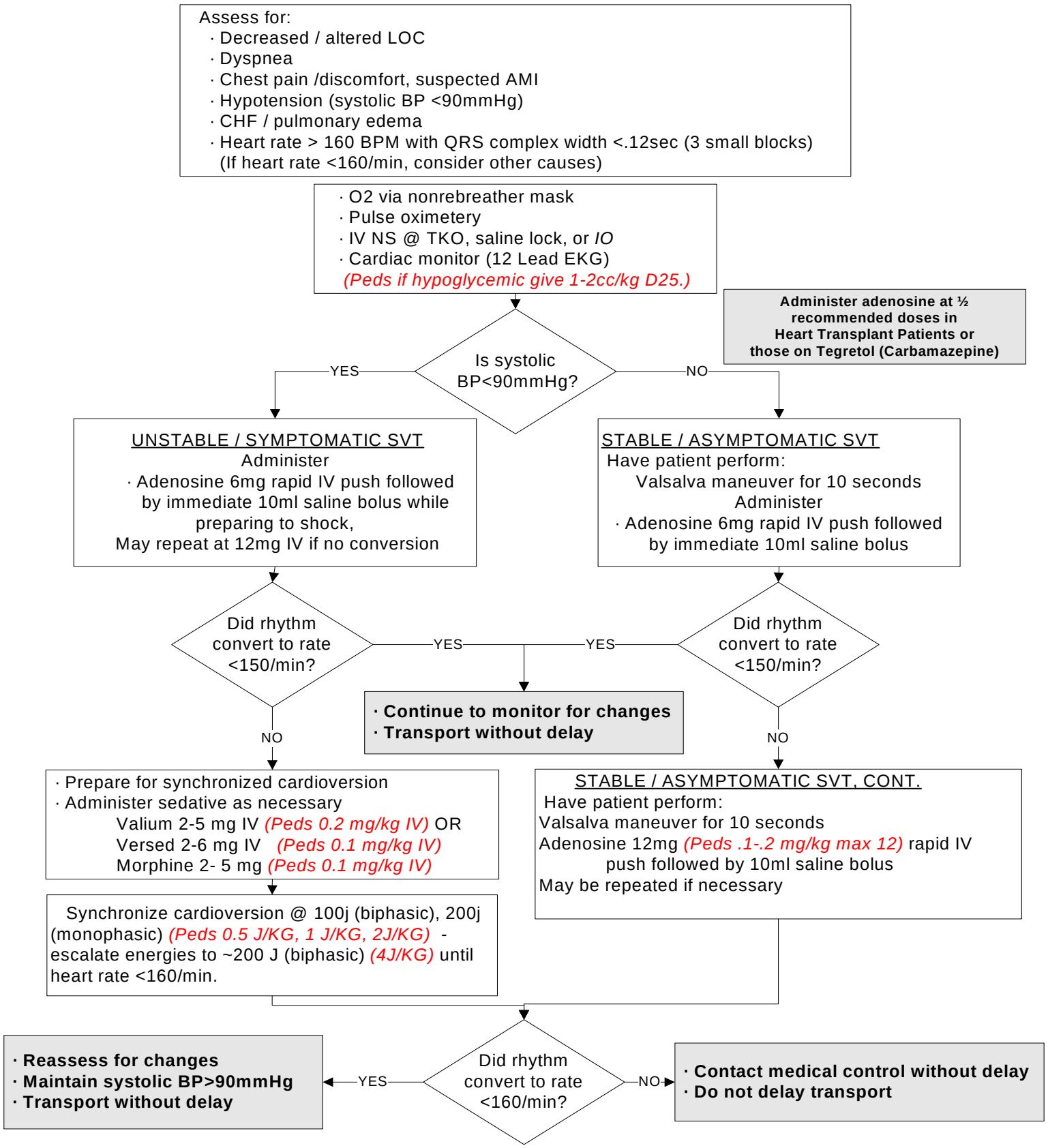
Request / administer with medical control authorization
- **Nitroglycerine 0.4mg SL every 1-2 minutes (may use spray or paste) until BP decreased by >15-20%. .**
- **Morphine Sulfate 2 - 6mg slow IV push**
- **Lasix 0.5 - 1 mg/kg IV if pulmonary edema present**

EMERGENCY PROTOCOL (Adult only)
2.e PREMATURE VENTRICULAR COMPLEXES



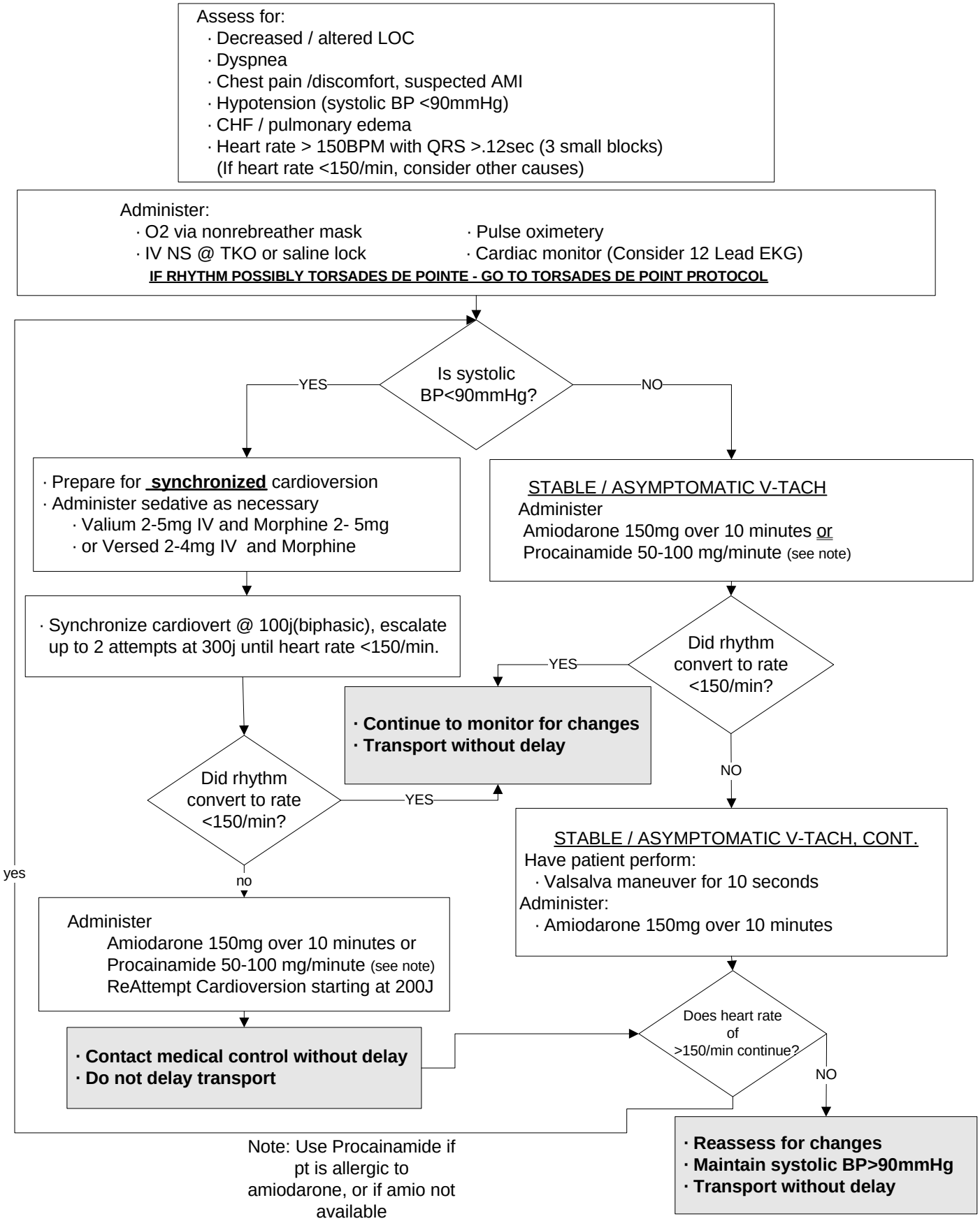
EMERGENCY PROTOCOL (Adult A2f, Peds -P2c)

2.f NARROW COMPLEX / SUPRAVENTRICULAR TACHYCARDIA (SVT)



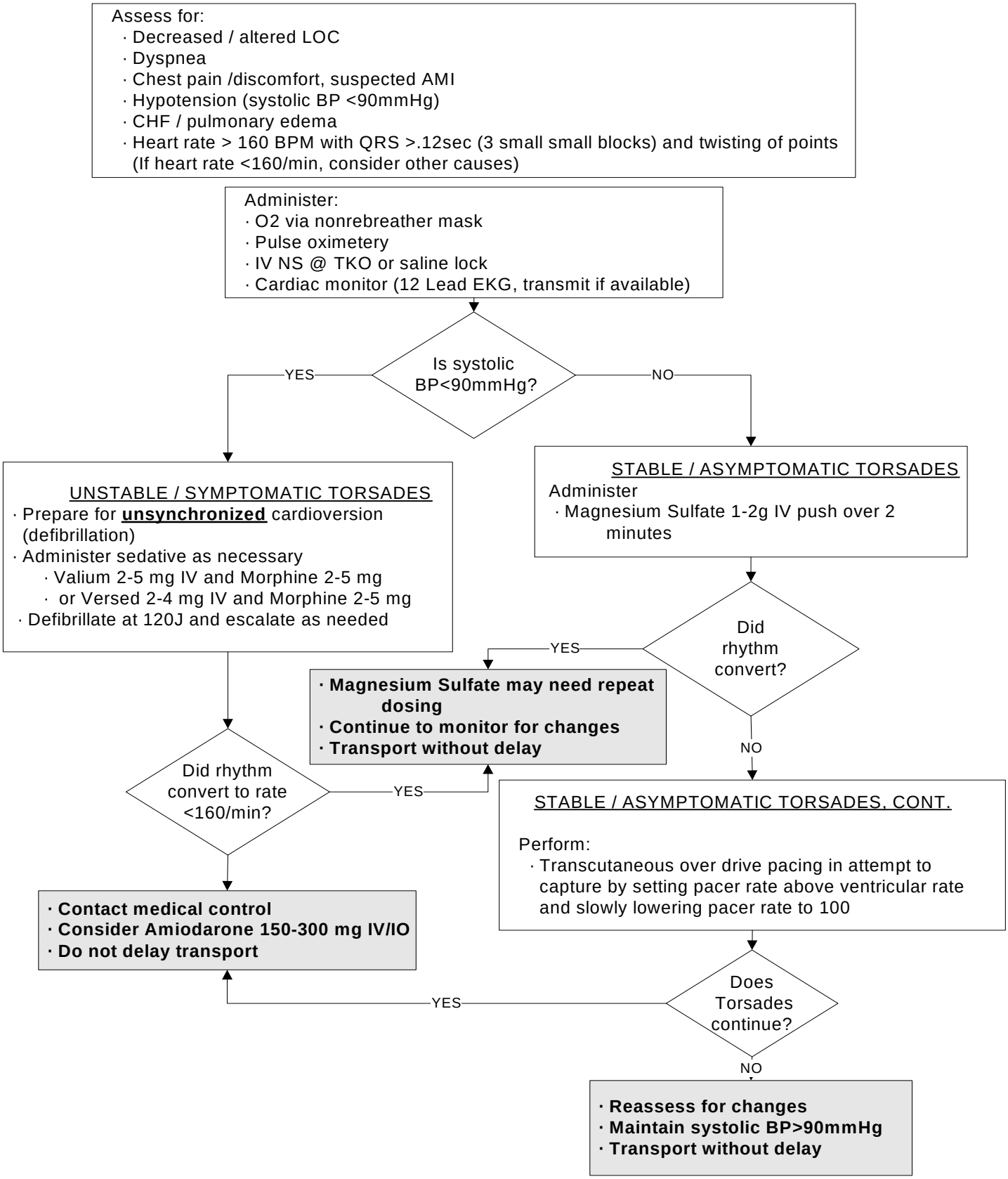
EMERGENCY PROTOCOL (Adult only)

2.g WIDE COMPLEX / VENTRICULAR TACHYCARDIA



EMERGENCY PROTOCOL (Adult only)

2.g(cont) TORSADES de POINTE / POLYMORPHIC VENTRICULAR TACHYCARDIA



EMERGENCY PROTOCOL (Adult A2h, Peds A2d)
2.h SYMPTOMATIC BRADYCARDIA

Assess for:
- · Decreased / altered LOC
- · Chest pain /discomfort, suspected AMI
- · CHF / pulmonary edema
- · Increased intracranial pressure
- · Heart rate < 60BPM
- · Dyspnea
- · Hypotension (systolic BP <90mmHg)
- · Hypothermia, hypoglycemia, drug overdose
- · Vagal response / tone (ie GI distress, pain response)
- · AV Blocks (1st degree, 2nd degree type I, II and 3rd degree)

(If heart rate >60BPM with above signs/symptoms - Contact medical control without delay)

Administer:
- · O2 high flow
- · Pulse oximetery
- · IV NS @ TKO, saline lock,*or IO*
- · Cardiac monitor / Perform 12 Lead EKG

IF PVC's ARE PRESENT WITH BRADYCARDIA; DO NOT ADMINISTER LIDOCAINE

Peds

HR <80 in infant or < 60 in child

Yes

Poor perfusion, resp distress, or hypotension

No

Yes

Start Chest Compressions Start IV or IO

Epinephrine 0.01 mg/kg IV or IO or 0.1 mg/kg ET. Repeat q 3-5 min Atropine 0.02 mg/kg IV or IO , max single dose 1 mg Repeat once in 3 minutes.

No

Adult

Is systolic BP <90mmHg and heart rate < 60/min present?

YES

Are 2nd or 3rd degree AV Blocks noted?

No

NO

· Assess for changes
· Do not delay transport

Apply:
- · Transcutaneous pacer pads

Administer:
- · Atropine 0.5mg IV

Does systolic BP <90mmHg and heart rate < 60/min cont.?

NO

Yes

Perform:
- · Transcutaneous pacing to attempt capture, or:

Administer:
- · Atropine 0.5 -1mg IV up to total of 0.04mg/kg or 2 mg adults

Does systolic BP <90mmHg and heart rate < 60/min cont.?

YES

NO

· Contact medical control without delay
· Notify of possible need of Transvenous pacer
· Request orders for Dopamine continuous IV infusions to increase heart rate
· Dopamine 5 - 20 mcg/kg/min

2. I New Onset Atrial Fibrillation and Flutter

A. Assessment

Paroxysmal Atrial Tachycardia
Atrial Flutter
Atrial Fibrillation
Symptomatic patient

B. Treatment – Standing Orders

1. Oxygen 100% and airway maintenance appropriate for the patients condition
   Consider the use of the transport ventilator, setting should be 100% or 50% FiO_2

2. I.V. NS or INT

3. Valsalva maneuver

4. If blood pressure is stable, administer Verapamil 2.5 - 5 mg I.V. slowly over two minutes. After 15 to 30 minutes, may give second dose of 5 – 10 mg (20mg max dose)

   a. If stable and no cardioversion with medical treatment, contact medical control

5. If patient is unstable consider synchronous cardioversion:
   Atrial flutter @ 30 joules
   Atrial Fib. @ 50 joules

   Pre-medicate with Valium 5 - 15 mg I.V. or Versed 3-5 mg and\or Morphine 2-5 mg IVP if time permits.

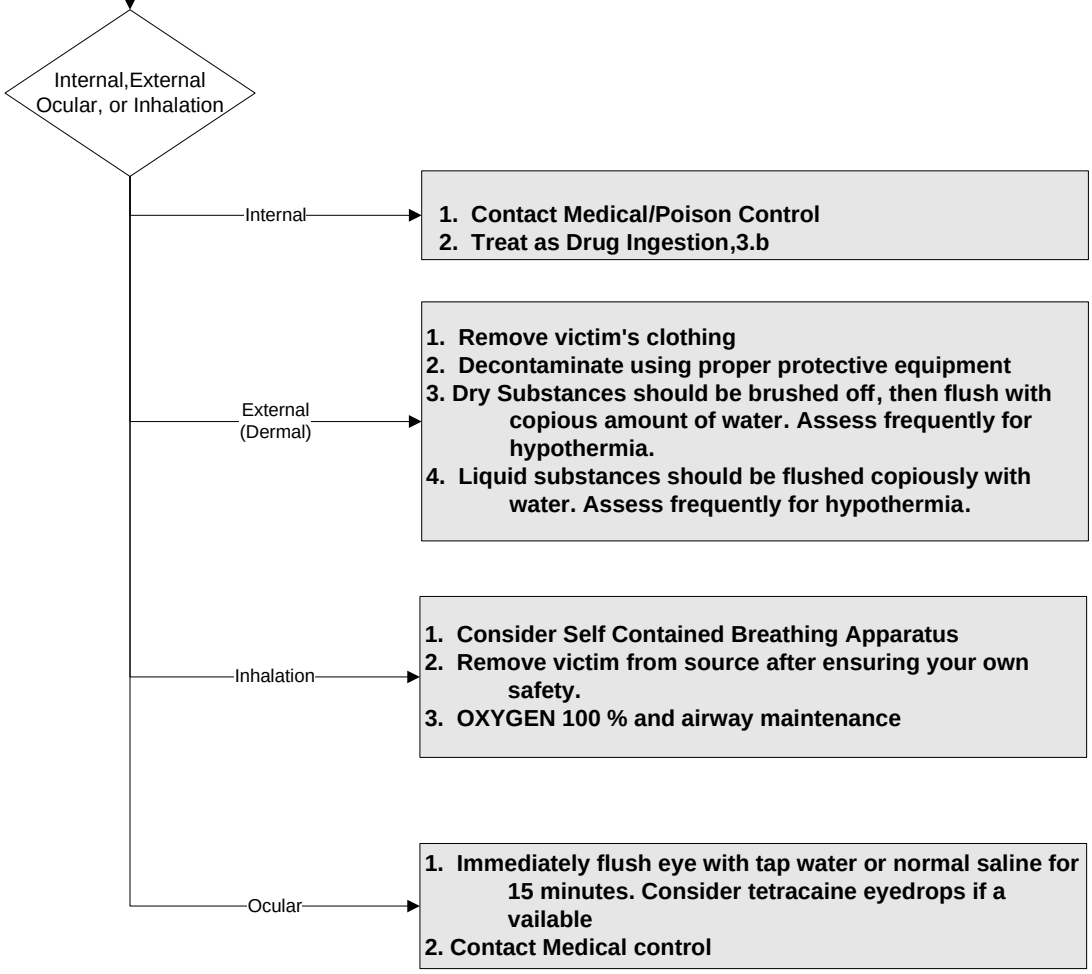
Note: When treating the elderly or with patients who have blood pressures in the lower range of normal, a lower dose of Verapamil (2-4 mg) is given over a longer period of time (3-4 mins.)

Immediate synchronized cardioversion (50, 75, 100, 120, 150, 200 joules) is recommended when there is an unstable rhythm with **serious signs and symptoms**:

a. chest pain
b. shortness of breath
c. decreased level of consciousness
d. low blood pressure

EMERGENCY PROTOCOL
3.A Chemical Exposure

A. ASSESSMENT
1. History of exposure to chemical
2. Protect yourself and bystanders from danger or exposure
3. Identify substance and verify with documentation (M.S.D.S.)
   Material Safety Data Sheets if available.
4. Consider Self Contained Breathing Apparatus and protective clothing
5. EMS functions in the COLD zone. Care should not be rendered in the hot/warm zones.
   Patient Decon should be complete prior to treatment



EMERGENCY PROTOCOL
3.B Drug Ingestion

ASSESSMENT
Questions to ask patient/family

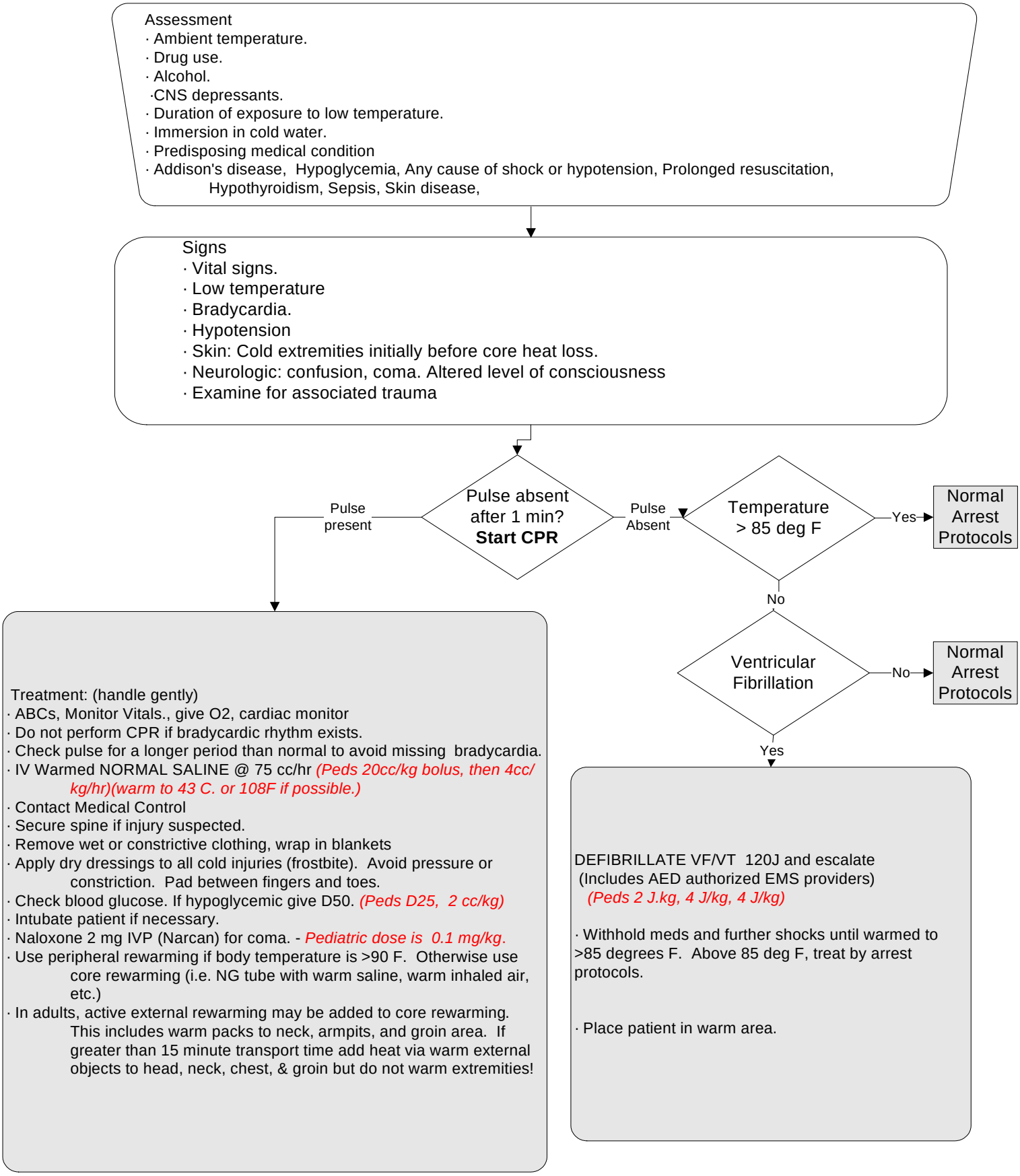
1. History or suspicion of drug ingestion (prescription, over-the-counter & illicit drugs, and alcohol)
2. Medical /Psychiatric illnesses
3. List of Medications (bring all pill bottles-full or empty-to hospital)
4. Has patient vomited?
5. Approximate time of ingestion
6. Amount of suspected ingestion
7. Any seizure activity
8. Patient's main complaint/symptom(s)

Signs/Symptoms

· Airway /Breathing /Circulation
· Neurologic Status (level of consciousness, pupils)
· General Appearance (sweating, dry or flushed skin, signs of trauma)
· C-spine & long spine board immobilization if suspected associated head/spine trauma. Be ready to turn board if patient vomits.
· Cardiac Monitoring (look at rate, rhythm, width of QRS)
· Pulse Oximetry, with supplemental oxygen if O2 sat < 92%
· Suction available for potential vomiting

TREATMENT
· Protect yourself from toxin and/or unruly patient
· ABCs, Monitor Vitals
· Oxygen, High flow
· Intubation as needed.
· IV Access -NS or LR at KVO or Saline Lock
· Chemstick-If hypoglycemic- one amp D50 W IV or GLUCAGON, 1-2 mg, IM
(Peds, give oral Glucose or 2cc/kg D25 IV)
· Narcan (naloxone) 2 mg IV *(Peds - 0.1 mg/kg)* if narcotic use is suspected
or if pupils are pinpoint and patient has altered mental state. Be alert for combative patient on arousal.
· Be alert for patients with drug paraphernalia (uncapped sharps) as well as weapons.
· Valium (diazepam)(Peds .1 mg/kg) IV or Versed 2-6mg IV/IO (peds dose 0.05-0.1 mg/kg) for a seizing patient
· Contact Medical control
· CONTACT POISON CONTROL FOR ADVICE, NOT FOR MEDICAL CONTROL

EMERGENCY PROTOCOL
3.C Hypothermia



EMERGENCY PROTOCOL
3.D Hyperthermia

History.
· Physical exertion.
· Environment - ambient temperature.
· Drug Use.
· Dark urine - suggests muscle break down and possible kidney damage.

Symptoms.
· Muscle cramps.
· Mental status changes - from light-headedness to coma.
· Nausea, vomiting.
· Headache.
· Seizures.
· Syncope, collapse, confusion, headache, dizziness, nausea, cramps, shock
· Flushing

Signs.
· Vital signs.
· Increased temperature.
· Tachycardia, hyperventilation, hypertension.
· Skin: sweating or dry.
· Neurologic: Light headedness, confusion to coma, seizures.
· Neck stiffness.

TREATMENT
· Ensure airway - nasopharyngeal airway may be needed.
· Suction and assist ventilation if needed (be prepared for vomiting).
· Give oxygen if indicated.
· Monitor vital signs.
· Oral Rehydration (if able to maintain airway)(Water or electrolyte solution)
· Cooling techniques:
  Remove from heat source.
  Remove clothing and cover with cool wet sheets.
  Sponge or splash with cool water.
  Fan to increase evaporation and subsequent heat loss.
  Use ice packs to groin and axilla if vital signs unstable.
· IV Fluids: NS or RL 500 cc fluid bolus (Peds 20 cc/kg) via large bore catheter, until symptoms resolved or vital signs stabilized or as directed by physician.
· Place on cardiac monitor.
· Do not administer Tylenol for hyperthermia
· Glucose strip test: Administer one amp (50 cc) of D50 (Peds 2cc/kg D25)
· Promote evaporative cooling by applying cool water to the entire skin surface by sponging or splashing, followed by fanning.
· Call Medical control

EMERGENCY PROTOCOL
3.E Near Drowning

ASSESSMENT
· History compatible with drowning
· Traumatic injuries.
· Respiratory status initially and document

TREATMENT
· ABCs, Monitor Vitals , CPR if indicated
· Assume head/neck injury, assure Spinal Stabilization and Immobilization.
· Monitor respiratory status closely. Oxygen Administration
· If hypothermia suspected, treat according to that protocol
· Have suction ready for vomiting.
· Dry patient to prevent further hypothermia
· No Heimlich maneuver should be routinely performed.
· Advanced Airway Management, if indicated (age and tube permitting).
· I.V. Normal Saline, Large Bore, KVO
· Contact Medical Control.
· Other cardiac protocols as indicated.
· For shock, administer 500 cc bolus or in Peds 10-20 cc/kg NS/LR bolus
· All near-drowning victims should be transported to the nearest hospital.

EMERGENCY PROTOCOL
3.F Snake bites

History
· Type of snake, · Time of bite
· Age and size of patient, Location of injury
· Prior first aid given, Change in signs and /or symptoms since occurrence
Note: Cautiously bring in snake for identification if possible in a solid container that the snake could not bite through. A dead snake is preferable.

Symptoms
· Parasthesias (numbness or tingling of mouth, tongue, or other areas)
· Local Pain
· Peculiar or metallic taste
· Chills, Nausea, vomiting, Headache, Dysphagia
· Vital Signs: hypotension, fever
· Skin: Bite wound location, configuration (1, 2, or 3 fang marks, entire jaw imprint, none) ; local edema, discoloration, blebs.

Treatment
· Keep extremity in neutral position
· Remove rings and bracelets from victim
· OXYGEN and airway maintenance appropriate to patient condition
· IV normal saline TKO
· If hypotensive give 1L normal saline bolus *(Peds 2cc/kg)*
· Mark progression of swelling at the time of initial assessment and every 5 minutes.
· Relieve anxiety, keep pt at rest
· Call medical control

EMERGENCY PROTOCOL
3.G Cyanide Poisoning

Assessment
· Presence of cyanide
· Smell of bitter almonds
· Serious fire inhalation in the presence of plastics
· Cardiac arrest in house fires and airplane fires

Treatment
· Protect yourself from contact with cyanide gas using self contained breathing apparatus
· Remove the patient to a non-contaminated area
· Oxygen 100% appropriate to patient's condition (intubate p.r.n.)
· Remove any clothing that is contaminated by cyanide & wash off any cyanide which is present on the skin
· Keep patient warm / monitor EKG
· IV NS (large bore catheter)
· Follow instructions as per cyanide kit (Lily) if available
· Contact Medical Control

EMERGENCY PROTOCOL
3.H Radiation/Hazmat

Assessment
History
· What was the extent of chemical exposure? (more than one victim… skin exposure vs. inhalational ongoing danger)
· What was the nature of the exposure? If it was a chemical or cleaning product, bring the container to the hospital.
· What symptoms & signs has the patient had?
· What decontamination has been done ?
Exam
· Airway/Breathing/Circulation
· Neurologic Status (level of consciousness, pupil size)
· General Appearance (dry or sweaty skin, flushed, cyanotic, singed hair)
· Look for associated injuries (broken bones from a fall or jump to escape fire)

Treatment
· Remove victim from the source of exposure.
· ABCs, Monitor Vitals
· Oxygen Administration, keep sats >98%
· Contact receiving hospital as early as possible
· If eye exposure, continue irrigation of eyes with saline enroute.
· In serious exposures, wash eyes even if asymptomatic.
· Remove any contaminated clothing from the patient and irrigate the skin with water.
· Oxygen 100% by face mask for suspected inhalational exposures.
· If suspected head/neck injury, assure Spinal Stabilization/Immobilization (Pregnant patient, place in left lateral recumbent position while immobilized)
· IV, NS/LR, Large Bore (titrate to effect)
· Cardiac Monitor
· Control/stop any gross hemorrhage & dress wounds.
· Treat burns per burn protocol

EMERGENCY PROTOCOL
3.I Electrocution/Lightning Injuries

Assessment
· Presence of electrical wiring
· Entry/exit wound

Treatment
· ABCs, Monitor Vitals
· Oxygen Administration to keep sats 98%
· Control/stop any gross hemorrhage & dress wounds.
· If suspected head/neck injury, assure Spinal Stabilization/Immobilization
(Pregnant patient, place in left lateral recumbent position while immobilized)
· IV, Normal Saline/Lactated Ringers, Large Bore
· If patient exhibits signs or symptoms of shock administer 250-500 ml NS/LR bolus fluid challenge
· Cardiac Monitor
· Cover evisceration with sterile, non-adherent material (moistened with NS)
· Stabilize any impaled objects
· Treat burns per burn protocol
· Consider 2nd NS/LR IV (enroute) Large Bore (titrate to effect)
· CONTACT MEDICAL CONTROL
· 250 ml, NS/LR Fluid Challenge (Peds- 20 cc/kg)
· Lightning injuries may present with many casualties. Triage carefully.

3.J ADULT ENVIRONMENTAL EMERGENCY

Nerve Agent Exposure

Assessment

History of exposure
Similar to Organophosphate poisoning
Hyper-stimulation of muscarinic sites (smooth muscles, glands) and nicotinic sites (Skeletal muscles, ganglions)
Increased secretions – saliva, tears, runny nose, secretions in airways, secretions in GI Tract, sweating
Pinpoint pupils
Narrowing airway
Nausea, vomiting, diarrhea
Fasciculations, Flaccid paralysis, general weakness
Tachycardia, hypertension
Loss of consciousness, convulsions, apnea

B. Treatment – Standing Order

1. Self protection and patient decontamination

2. Oxygen 100% and airway maintenance appropriate to the patients condition

3. Depending on signs and symptoms administer Mark I antidote kit

    a. Mild – increased secretions, pinpoint pupils, general weakness
        i. Decontamination , supportive care
    b. Moderate – mild symptoms and respiratory distress
        i. 1 Mark I kit
        ii. May be repeated in 5 min prn
    c. Severe – unconsciousness, convulsions, apnea
        i. 3 Mark I kits
        ii. 10 mg Valium or 3 mg Versed for seizures

4. I.V. N.S.

5. Keep patient warm / monitor E.K.G.

6. Initiate immediate transport as soon as possible

C. Treatment - Protocol

Repeated doses of Atropine after 6mg given with kits

3.K Sickle Cell Anemia
Pain Crisis

Assess Patients with known Sickle Cell Disease
Signs of infection, hypoxia, dehydration

Document:
Fever, location of Pain, Similarity to prior Sickle Crises, pulse Oximetry

Administer;
Oxygen at least 2-4LPM
Keep O2 Sats >95%
IV Access, bolus 10-20cc/kg

If pain persists:
May administer Morphine in 2mg increments every 10 minutes up to 6 mg

Use caution in administering Narcotics to a Patient with SpO2 <95%	All Patients who receive medications **must** be transported for further evaluation

EMERGENCY PROTOCOL
4.A Stroke/CVA

Assessment
· Alteration in consciousness (coma, stupor, confusion, seizures, delirium)
· Atypical headache associated with decreased level of consciousness or neurological deficit;
· Unusual and severe neck or facial pain
· Dysarthria (slurred or indistinct speech)
· Aphasia (incoherent speech or difficulty understanding speech)
· Facial weakness or asymmetry (Paralysis of the facial muscles, usually noted when the patient speaks or smiles); may be on the same side or opposite side from limb paralysis
· Incoordination, weakness, paralysis, or sensory loss of one or more limbs;usually involves one half of the body particular the hand
· Ataxia (poor balance, clumsiness, or difficulty walking)
· Visual loss (monocular or binocular); may be a partial loss of visual field
· Intense vertigo, double vision, unilateral hearing loss, nausea, vomiting, photophobia, or phonophobia

Treatment
· ABCs, Monitor Vitals
· Monitor pupils and Mental Status
· Spinal Stabilization (if trauma suspected), Elevate Head 30 degrees
· Cardiac Monitor
· if Gag reflex NOT Intact, Intubate, hyperventilate only when signs of herniation (unresponsive with unequal pupils)
· IF CONSCIOUS, Administer Oxygen @ 2-4L if sats < 97%
· IV, Normal Saline, TKO (not to exceed 30 ml/hour), or saline lock
· Check glucose
· NARCAN (naloxone) 2 mg IV push (Peds 0.1mg/kg) (only if narcotics suspected)
· If hypoglycemic give oral Glucose, if able to maintain airway or
DEXTROSE, 50%, 25 gm IV bolus *(Peds 2cc/kg D25)*
In adults, If no IV access, GLUCAGON, 1-2 mg, IM.
· Contact Medical Control
· Maintain body heat, protect affected limbs from injury, anticipate seizures
· IF SHOCK SIGNS PRESENT Follow Shock Protocol
· IF SEIZURES PRESENT Follow Seizures Protocol
* Complete Thrombolytic screening protocol
* Complete Stroke Assessment Scale
If Positive for CVA, Consider transport to Stroke Center

Los Angeles Prehospital Stroke Screen (LAPSS)

For evaluation of acute, non-comatose, non-traumatic neurologic complaint. If items 1 -6 are all checked "Yes" (or "Unknown") provide prearrival notification to hospital for stroke patient. If any time is checked "No" return to appropriate treatment protocol.

Criteria	Yes	Unknown	No
1. Age > 45 year	?	?	?
2. History of seizure or epilepsy absent	?	?	?
3. Symptom duration < 24 hrs	?	?	?
4. At baseline, patient is not wheelchair bound or bedridden	?	?	?
5. Blood glucose between 60 and 400	?	?	?
6. Obvious asymmetry (right vs. left) of any of the following 3 exam categories (must be unilateral)			

	Equal	R Weak	L Weak
Facial smile grimace		Droop	Droop
Grip		Weak grip	Weak grip
		No grip	No grip
Arm strength		Drift down	Drift down
		Fall rapidly	Fall rapidly

Be Sure to Document "TIME of ONSET" of symptoms. This is the last time the patient was seen to be in a pre-stroke state.

EMERGENCY PROTOCOL
4.B Seizure/Convulsions

Assessment
1 .Seizure: Onset, duration, type, post-seizure level of orientation
2 .Medical: Head trauma, diabetes, headaches, drugs, alcohol, seizures, pregnancy
3 .Physical: Seizure activity, level of consciousness, incontinence, head and mouth trauma, vital signs
· If patient is actively seizing, consider therapy if:
- · Unstable ABCs exist
- · Patient has been actively seizing for 5 or more minutes
- · Patient has underlying disease or condition that will be adversely affected if seizures continue (i.e. Trauma, COPD, Pregnancy, Severe hypertension, etc.).

Rapidly perform secondary survey before, after, or during therapy.
Specifically evaluate for:
- · Active bleeding, Signs of Trauma, Eye Deviation, Pupil equality, Mouth or tongue bleeding, Urinary or fecal incontinence, Lack of arm or leg movement or tone

Treatment
· ABCs, Monitor Vitals
· If patient is seizing, remove any dangerous objects from patient's vicinity (i.e., sharp objects, glass, etc).
- · DO NOT insert tongue blades into mouth.
- · DO NOT restrain patient if actively seizing.
- · Loosen any constricting clothing.

· Oxygen at high flow. Assist breathing with BVM if apneic or cyanotic.
Suction airway and intubate as needed.
C-spine Precautions and Immobilize if Appropriate.
· Chemstrip patient as soon as is practically possible. If Hypoglycemic
- · DEXTROSE, 50%, 25 gm (PEDS -1- 2cc.kg D25 IV or IO) IV bolus or
- · In adult - (if no IV access) GLUCAGON 1-2 mg, IM

· Cardiac Monitor-Treat dysrhythmias per protocols
· If febrile, cool as per hyperthermia protocol and monitor.
· In adults, infuse benzodiazepine carefully
- ·use Valium 2-5mg, versed 2-6 mg, or Ativan 2-5 mg IV

· Contact medical control
· *In peds, if seizure persists: Valium (diazepam) 0.1 mg/kg IV or IO, Valium(diazepam) 0.5 mg/kg PR, or versed 0.1 mg/kg IV or IO. Repeat medication once if seizure persists for 4 minutes. Repeat medication if seizure recurs.*
· If narcotic overdose, NALOXONE HCL 2.0 mg IV, IM, SQ, ET *(Peds - Narcan (naloxone) 0.1 mg/kg IV up to 2 mg titrated to effect if narcotic use is suspected)*
· Monitor O2 saturation if available

EMERGENCY PROTOCOL
4.c Altered Mental Status/Coma(Adult 4c Peds 4B)

Assessment
· Altered level of consciousness with vital signs.
· Assess for head trauma, hypothermia, hemiparesis, and fever.
· Associated with ingestions, meningitis, shock, head trauma, seizure or post-ictal state, respiratory failure, hypoglycemia, hypoxia, DKA
· *Peds-Less commonly associated with intussusception, intracranial catastrophe, metabolic disorder*

Treatment
· ABCs, Monitor Vitals
· Oxygen Administration, High flow
· Cardiac Monitor
· IV, Normal Saline, TKO, or saline lock
· If Hypoglycemic
· Oral Glucose, if able to maintain airway, CVA not suspected and patient has history of diabetes
· DEXTROSE, 50%, 25 gm IV bolus *(Peds administer D25 at 2 cc/kg IV if BS < 40-80)*
· If no IV access, GLUCAGON, 1-2 mg, IM *(Peds -GLUCAGON, 0.1 mg/kg, IM)*
· NALOXONE HCL, 2.0 mg, IV, IM, ET (titrate to effect) , *Peds < 5 yrs - 0.1 mg/kg up to 2 mg IV, > 5 yrs - 2 mg IV.*
· Thiamine 100mg IV if ETOH history suspected
· CONTACT MEDICAL CONTROL
· 250-500 ml Normal Saline Fluid Challenge *(Peds 20 cc/kg)*

EMERGENCY PROTOCOL
4.D/E Hypo- and Hyperglycemia

Blood sugar <60

ASSESSMENT
1. History of onset in minutes
2. History of Insulin excess (overdose, missed meal, exercise, vomiting, or diarrhea)
3. Confusion, agitation, headaches, or comatose
4. Irritability, jitteriness, pallor, sweating, weakness
5. Pulse Rate: normal to tachycardia
6. Respirations: Shallow, slow
7. Skin: Sweaty, often cool
8. Flaccid muscle tone, or Grand Mal Seizures
9. Fecal, urinary incontinence

TREATMENT
. Continually monitor vital signs
. Cardiac monitor if comatose
. OXYGEN at flow rate appropriate to patient condition
. IV NORMAL SALINE TKO , flush with IVF after d50 bolus
. If level of consciousness allows, consider oral sugar solution.
. Dextrose (D50) 25 gm IV (Peds- (D25) 2-4 cc/kg IVP).
. Contact Medical Control.
. Recheck blood glucose level, and repeat IV dextrose bolus if still<60 mg%
. Monitor blood glucose level every 30 minutes during transport
. Monitor level of consciousness
. GLUCAGON 1 mg IM (Peds 0.5 mg) may be given if no IV access
. Consider Thiamine 100mg IV.

Blood Sugar >200

ASSESSMENT
1. History of onset
2. Altered level of consciousness
3. Pulse: tachycardia, thready pulse
4. Respirations: Kussmaul: deep and rapid
5. Hypotension
6. Dry mucous membranes
7. Skin may be cool: consider hypothermia
8. Ketone odor on breath
9. Abdominal pain; nausea, vomiting
10. History of polyuria, polydipsia, or polyphagia
11. Flushed appearance
12. If ketone odor, Kussmaul respirations, persistent hypotension, known diabetic - suspected diabetic ketoacidosis

TREATMENT
1. OXYGEN at flow rate appropriate to patient condition
2. IV NORMAL SALINE TKO, consider bolus of fluid.
3. Contact Medical Control.
4. . If over 250 mg/percent, infuse 500 cc bolus NS

Seizures

A. Assessment

- Seizure: onset, duration, type, post-seizure level of orientation
- Medical: head trauma, diabetes, headaches, drugs, alcohol, seizures
- Physical: seizure activity, level of consciousness, incontinence, head and mouth trauma, vital signs

B. Treatment

Cool patient if febrile

1. Oxygen 100% and airway maintenance appropriate to patient's condition (intubate prn)

2. Evaluate cardiac rhythm

3. Check blood sugar level – (if < 40mg / percent, administer Dextrose (D50) 1 cc/kg and dilute 1:1 with NS.

4. IV NS KVO

CONTACT MEDICAL CONTROL, CONSIDER

- Valium 0.2-0.5 mg/kg @ 1 mg/min, if IV is unsuccessful, administer rectally to max. dose of 5 mg for children <5 yrs. or 10 mg for children >5 yrs. or until seizure stops as follows:

1.	Locate rectal opening
2.	Advance a TB syringe (without the use of a needle), until half of the barrel is in the rectal vault
3.	Gently inject 0.5 mg/kg up to a max. of 10 mg into the rectal vault, then withdraw the syringe
4.	Hold the buttock together while observing the area for reflux of the Valium from the rectum
5.	If not done previously, check blood sugar and if < 40 mg %, contact medical control

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EMERGENCY PROTOCOL
5.A Abdominal Pain (non traumatic)

ASSESSMENT
SECONDARY SURVEY

A. HISTORY
1. Description of pain, i.e. onset, duration, location, character, radiation.
2. Aggravating factors, i.e. movement, food, alcohol.
3. Last menstrual periods in females.
4. Vaginal bleeding in females.
5. Recent trauma.
6. Blood in urine, vomitus, or stool.
7. History of abdominal surgery or problem, i.e. ulcers, pancreatitis, etc.

B. SYMPTOMS
1. Nausea, vomiting, or diarrhea.
2. Fever

C. SIGNS
1. Vital signs: watch for tachycardia or hypotension.
2. Skin: Diaphoresis, jaundice
3. Chest: Breath sounds, asymetric excursions, costochondral angle tenderness
4. Abdomen: tenderness, masses especially pulsatile, ridigity, hernia, pregnancy, distension, femoral pulses/neuro deficit.
5. Is there guarding? Does the patient remain quiet or have colic type pain and is unable to find a comfortable position.

TREATMENT

May give Phenergan 6.25-25 mg IV if intractable nausea and /or vomitting (use lower doses in elderly)

· ABCs, Monitor Vitals
· Oxygen Administration as appropriate
· Place patient supine, with legs elevated, with flexion at hips and knees (unless respiratory compromise or procedure is contraindicated)
· Allow the patient to assume a comfortable position
· IV, Normal Saline/Lactated Ringers, Large Bore (titrate to effect)
· If patient exhibits signs or symptoms of shock, administer 20cc/kg NS/LR bolus then titrate for effect. *(Peds 20 cc/kg NS)*
· Cardiac Monitor - Treat dysrhythmias per protocols
· If patient continues to exhibit signs or symptoms of shock, establish 2d NS/LR IV, (enroute) Large Bore, (titrate to effect)
· If signs of hypoperfusion, continue to infuse both lines wide open
· If no signs of hypoperfusion, reduce IV(s) to a rate of 150-250 ml/hr total.

CONTACT MEDICAL CONTROL

EMERGENCY PROTOCOL
6.A Anaphylactic Shock

ASSESSMENT
1. Associated with stings or ingestion of allergen.
2. Respiratory signs and symptoms should predominate i.e., dyspnea, bilateral wheezes.
3. Urticaria, generalized erythema.
4. Note presence of hypotension, altered mental states, shock, diaphoresis.

TREATMENT
1. OXYGEN 100 %
2. Epinephrine 1:1000 0.01 mg/kg IM up to maximum of 0.3 cc.
   (Peds -0.01 cc/kg IM up to maximum of 0.3cc/dose)
3. Primary IV NS or LR with large bore catheter-give 500 cc bolus if hypotensive
   (Peds-Primary IV, NS/LR with large bore catheter. Give 20 cc/kg bolus if hypotensive.)
4. BENADRYL (diphenhydramine) 25-50 mg IV push *(Peds-1 mg/kg IVP)*
5. Epinephrine .3 cc of 1:1000 IM to all patients above 30-40 kg.
6. Consider Epinephrine drip 1:100,000 (1cc of 1:1000 in a 100 cc bag) for IV infusion, titrated to effect.
7. Solumedrol 62.5 -125mg IVP
8. Consider albuterol aerosol.
9. Consider glucagon 1 mg IM/IV if unresponsive to Epinephrine, especially if taking Beta blockers
10. Contact Medical/Trauma Control

EMERGENCY PROTOCOL
6.B Cardiogenic Shock

ASSESSMENT
- Frequently associated with tachy/brady dysrhythmia, acute MI, or Blunt Chest Trauma.
- Neck vein distention in sitting position
- Moist sounding lungs (rales, rhonchi)
- Peripheral edema if chronic heart failure
- Determine if cardiac dysrhythmia exists
- Consider tension pneumothorax
- Consider cardiac tamponade
- In Children
  - Tachycardia unless bradydysrhythmia
  - May have hepatomegaly
  - May develop hypoglycemia
  - May have jugular venous distension (difficult to see before school age)
  - Patient treated for hypovolemic shock who worsens with therapy
  - Frequently associated with dysrhythmias, myocarditis, cardiomyopathy or blunt chest trauma

TREATMENT
- Semi-Fowlers or position of comfort
- OXYGEN 100 % and monitor cardiac rhythm.
- IV NORMAL SALINE with large bore catheter. *(Consider Intraosseous infusion for Peds)*
- Determine if cardiac dysrhythmia exists. Treat dysrhythmia according to appropriate cardiac protocol
- Contact Medical/Trauma Control
- RINGERS LACTATE or NORMAL SALINE 250 cc -500 cc fluid IV bolus *(Peds 20 cc/kg)* if pressure remains low
- In Adults, INTROPIN (dopamine) titrate to effect.
- *In Peds - Dopamine (Intropin) 6 mg/kg in 100 cc D5W or NS admix. Begin drip at 6 cc/hr (titrate)= 6 mcg/kg/min*

EMERGENCY PROTOCOL
6.C Hypovolemic Shock

ASSESSMENT
· Change in mental status (anxiety, coma, etc.)
· Blood loss due to penetrating injuries to torso or other major vessel.
· Fx of femur or pelvis
· GI bleeding, vaginal bleeding, or ruptured ectopic pregnancy
· Dehydration caused by vomiting, diarrhea, inadequate fluid intake, excessive fluid loss due to fever, uncontrolled diabetes, or burns.
· Pulse may be greater than 120 beats per minute
· Blood pressure less than 90 mm Hg systolic. (Late findings.)
· Orthostatic changes in vital signs (Consider possible spinal injury)
  · Pulse increase of 20 beats per minute
  · B/P decrease of 10 mm Hg systolic
· Severe shock is defined as decreased level of consciousness, absent radial pulse, capillary refill greater than 2 seconds, no palpable blood pressure.

PEDIATRIC ASSESSMENT:
- Cool, clammy skin
- Tachycardia
- Poor capillary refill
- Decreased level of consciousness
- History of fluid loss or hemorrhage
- Diminshed central pulses/hypotension if decompensated
- May be hypoglycemic

TREATMENT
· ABCs, Monitor Vitals and cardiac rhythm
· OXYGEN high flow.
· Control/stop any gross hemorrhage (avoid tourniquets) & bandage wound
· If suspected head/neck injury, assure Spinal Stabilization/Immobilization
· Primary IV Normal saline or Lactated Ringers (large bore catheter).
· Secondary IV Normal Saline or Lactated Ringers (large bore catheter) Rate commensurate to blood loss or vital signs, Warm fluid
· Place patient in supine position with legs elevated 15 degrees unless respiratory compromise
· If etiology suggests cardiogenic shock, see cardiogenic shock protocol
· Administer 20cc/kg NS/LR bolus (titrate to effect) *(Peds 20 cc/kg)*
· If after 1 liter of fluid, there are still signs of hypoperfusion, continue to infuse both lines wide open
· Dopamine 2-20 ug/kg/min and titrate for effect
Contact Medical Control

In Pediatrics
· IV - IO, NS, 20 cc/kg push (large bore catheter).
· Reassess patient
· Repeat fluid bolus 10-20 cc/kg if no improvement
· Place a second IV as needed
· Maintain temperature above 97 F
· If blood glucose becomes less than 80 mg% use Pediatric Hypoglycemia Protocol.
· Contact Medical Control if not improved

EMERGENCY PROTOCOL
6.D Neurogenic Shock

ASSESSMENT
· Associated with spinal cord injuries and overdoses
· Signs of hypovolemic shock without peripheral vasoconstriction (Warm Shock)

TREATMENT
· Secure Spine and Airway
· OXYGEN 100 % and control ABC's
· Primary IV Access with large bore catheter, bolus 20 cc/kg of NS or LR. (Peds-20 cc/kg, Rebolus with 10 cc/kg NS)
· Secondary IV Access with large bore catheter TKO of Normal Saline or Lactated Ringers.
· Consider occult bleeding and treat as Hypovolemic shock
Neurologic Assessment
· Contact Medical/Trauma Control
· INTROPIN (dopamine) titrate if perfusion is not restored.
Peds -
· Consider Dopamine at 2-20 micrograms/kg/min
· Consider Intraosseous Infusion.

EMERGENCY PROTOCOL
6.E Septic Shock

ASSESSMENT
· Skin may be cool, clammy or warm and dry.
· Poor capillary refill
· Tachycardia/Hypotension
· Potential for underlying infection
· Hyperthermic or hypothermic
· May have petechiae and purpura (peds)

TREATMENT
· OXYGEN 100 %
· IV LACTATED RINGERS OR NORMAL SALINE with large bore catheter 20cc/kg fluid bolus.
Peds - 20 cc/kg push. Consider Intraosseous Infusion if IV access is not obtained
Check glucose. If blood glucose becomes less than 80 mg/% use Pediatric Hypoglycemia Protocol
· Avoid heat loss -Maintain temperature above 97 F
· Reassess patient after initial bolus
· Contact Medical/Trauma Control
· If still in shock, repeat bolus 10-20 cc/kg NS
· If unchanged or worse, assess for cardiogenic shock
· If no improvement after 2 fluid boluses, re-contact medical control
· INTROPIN (dopamine) and titrate.
Peds -
· Consider Dopamine at 2-20 micrograms/kg/in.
· Consider Intraosseous Infusion.

EMERGENCY PROTOCOL
7.a TRAUMA ASSESSMENT / DESTINATION GUIDELINES

· Perform primary and secondary survey
· Treat any life threatening injuries / illnesses
· Obtain vital signs
· Determine mechanism of injury
· Obtain past medical history, medications & allergies if possible

Is transport to trauma center >30 min?

YES

· Initiate transport to closest appropriate medical facility
· Notify medical control of decision

NO

TRANSPORT TO LEVELI TRAUMA CENTER IF:
· If GCS is <13 and/or
· Systolic BP is <90mmHg
· Respiratory rate <10 or >30

TRANSPORT TO LEVELI TRAUMA CENTER IF:
· Penetrating injury proximal to elbow or knee
· Flail chest, penetrating chest or abdominal injuries
· Combination trauma with burns of >15% BSA, OR to face and/or airway
· Limb paralysis
· Amputation proximal to wrist and/or ankle
· Patient ejection from vehicle
· Death of passenger in same vehicle
· Extrication time >20 min with above trauma

CONTACT TRAUMA CONTROL TO CONSIDER TRANSPORT TO LEVEL I, II or III TRAUMA CENTER
· High speed auto accident with suspected injury(ies)
  · Velocity change of >20 mph
· Major vehicle deformity of >20"
· Passenger compartment intrusion of >12"
· Auto vs. pedestrian injury with >5mph impact
· Pedestrian run over, thrown by vehicle
· Motorcycle accident >20mph or with separation of rider and motorcycle
· Bicycle accident with significant impact

CONTACT TRAUMA CONTROL TO CONSIDER TRANSPORT TO LEVEL I, II or III TRAUMA CENTER
· Patient age > 55 years
· Known cardiac, respiratory disease or psychoses on medication
· Insulin dependent diabetic, cirrhosis, malignancy, obesity or congenital coagulopathy.

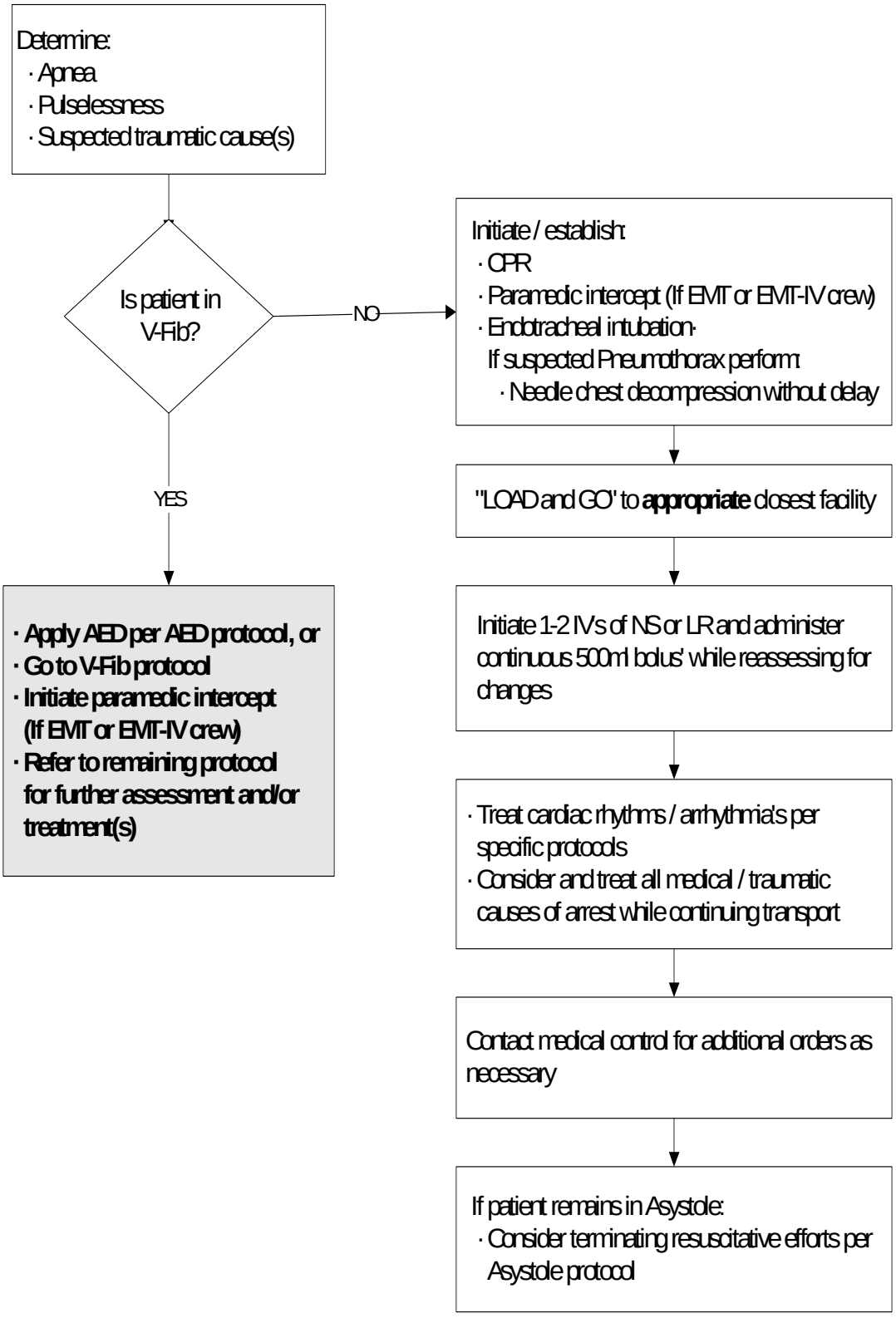
· Transport to trauma center may exceed >30min if dictated by local medical control or trauma control

· Medical control will have final jurisdiction over destination, excluding:
  · Any patient of legal majority(age 18 or over), the parent or legal guardian of a minor patient or an emancipated minor shall have the right to request transport to a specific facility within one adjacent county from the transport origin.

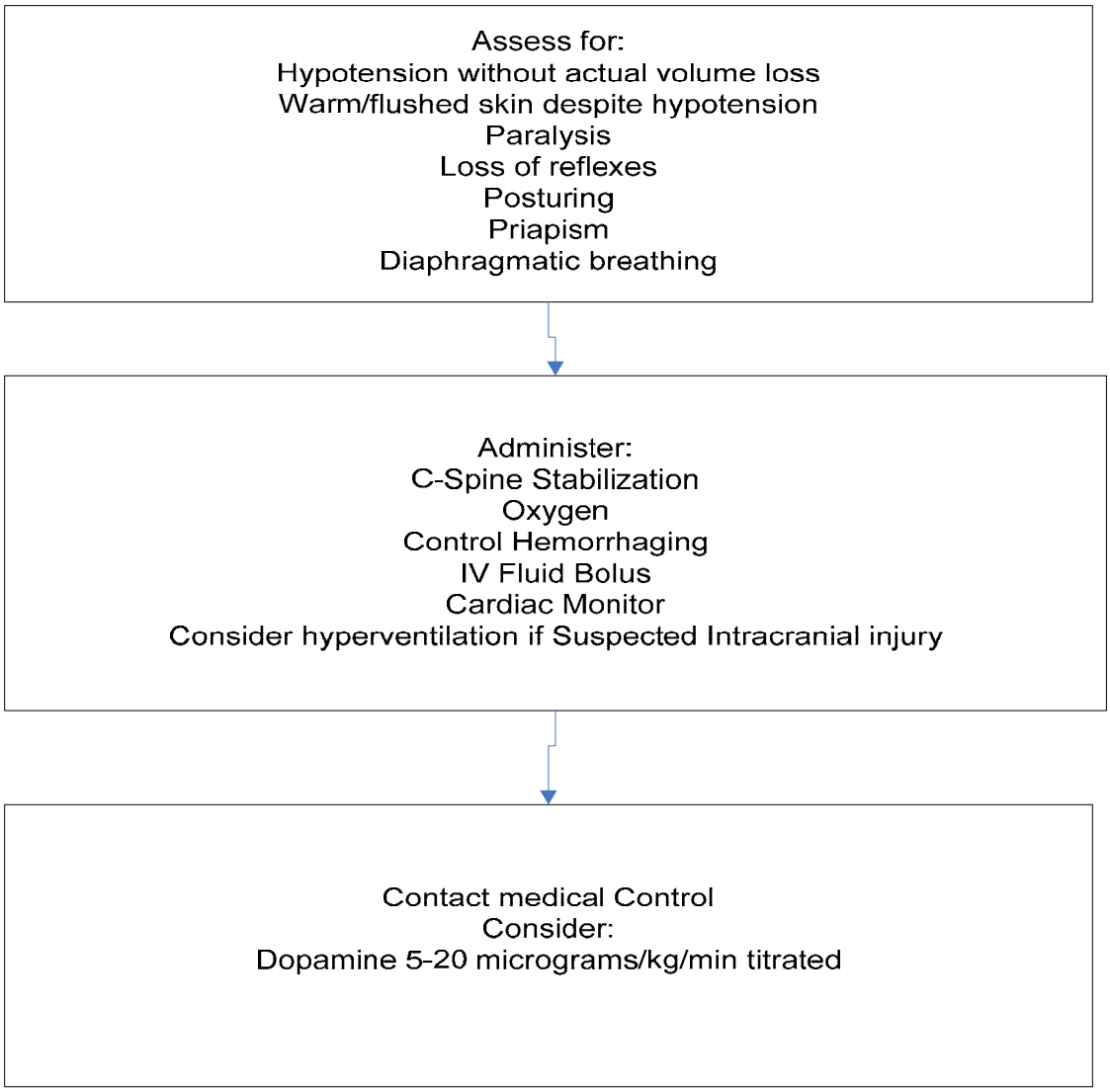
· Transport of the patient to the requested destination shall not constitute neglect of duty imposed by law on all EMS personnel if the person making the decision has been informed that Tennessee has a trauma system which would in their circumstance transport them to another facility.

· If the patient's condition deteriorates during transport, such that their life / health are considered in serious jeopardy if the requested / planned destination is pursued, AND if Medical Control deems transport to a higher level trauma center is necessary, the patient may be transported to the appropriate facility.

EMERGENCY PROTOCOL
7.b TRAUMATIC CARDIAC ARREST



EMERGENCY PROTOCOL
7.C. SPINAL CORD INJURIES / NEUROGENIC SHOCK



EMERGENCY PROTOCOL
7.d EYE TRAUMA

Assess for:
- Impaled object(s)
- Inability to open eyes
- Swollen, edemetous eye(s)
- Photophobia
- Visual defects, loss of vision
- Redness

Administer / initiate:
- Cervical spine stabilization / immobilization if suspected injury
- High flow O2 if associated trauma / burns
- If suspected from increased intracranial pressure
  - Hyperventilate with BVM @ 20-24/min
- Cardiac monitoring

Is thermal or chemical burn suspected?

YES →
Administer
- Anesthetic such as tetracaine in injured eye
- Wait 30 seconds
- Flush eye(s) with NS or water for 15min using Morgan Lens if possible
- Cover both eyes
- DO NOT delay transport

NO ↓

Is penetration present?

YES →
- Stabilize penetrating object(s)
- Cover unaffected eye
- DO NOT delay transport

NO ↓

Is blunt trauma suspected?

YES →
- Cover both eyes
- DO NOT delay transport

NO ↓

Is loss of vision present?

YES →
If loss of vision was sudden, painless and non-traumatic, consider Retinal Artery Occlusion:
- Apply cardiac monitor and assess for changes
- Apply vigorous pressure using heel of hand to affected eye for 3 - 5seconds, then release. (Patient may perform this procedure)

NO ↓

- **Contact medical control for further orders**
- **DO NOT delay transport to appropriate facility**

EMERGENCY PROTOCOL
7.e THORACIC TRAUMA

Assess for:
- Impaled object(s)
- Decreased / unilateral breath sounds
- Penetrating wounds
- Subcutaneous emphysemia
- Tympanic percussion (similar to striking drum)
- Tracheal deviation at sternal notch

Administer / initiate:
- Cervical spine stabilization / immobilization
- High flow O2 via nonrebreather
- If respirations <10 or >30 ventilate with BVM
- Stop any life threatening hemorrhaging
- 1-2 IV of NS or LR TKO
- Cardiac monitoring (assess for cardiac dysrhythmias)

Is tension pneumothorax suspected?
- YES → **REFER TO TENSION PNEUMOTHORAX PROTOCOL A.7.f**
- NO ↓

Is open pneumothorax present?
- YES → Apply:
  - 3-sided occlusive dressing(s) puncture wound(s)
  - Reasess frequently to assure adequate air release from dressing to prevent development of tension pneumothorax
- NO ↓

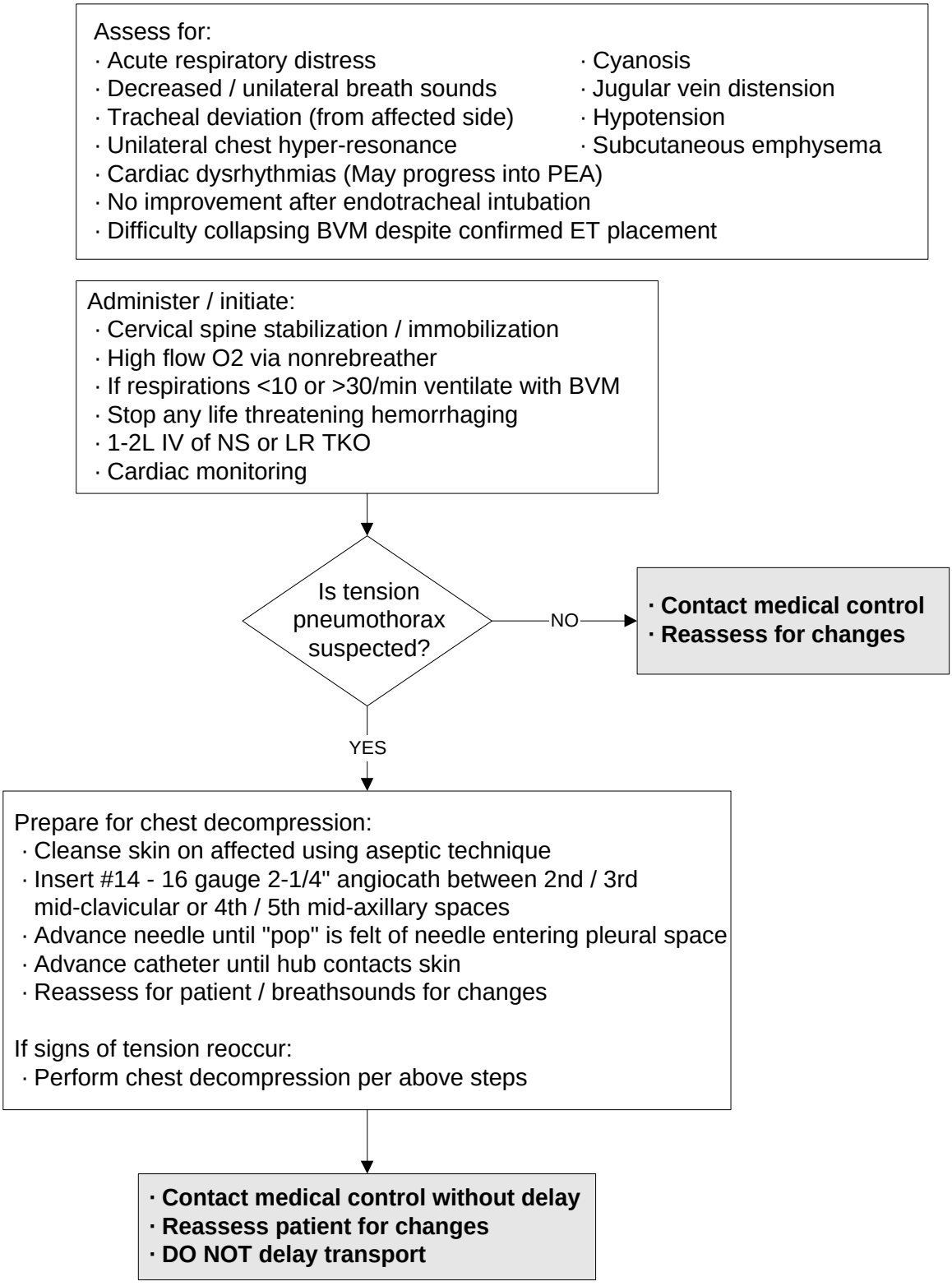
Is flail chest present?
- yes →
  - Manually stablilze segment(s)
  - Stabilize flail segment(s) with tape & trauma dressings
  - Reassess for development of pneumothorax
- NO ↓

Is systolic BP <90mmHg?
- YES → Administer:
  - 20cc/kg bolus of NS or LR
  - Repeat as necessary
  - Target Systolic BP is 100-110
  - Reassess for changes
- NO ↓

Is impaled object present?
- YES →
  - Stabilize impaled object(s)
  - Reassess for development of pneumothorax
- ↓

- **Contact medical control without delay**
- **Reassess for changes**
- **DO NOT delay transport**

EMERGENCY PROTOCOL
7.f TRAUMATIC TENSION PNEUMOTHORAX



EMERGENCY PROTOCOL
7.g ABDOMINAL / PELVIC TRAUMA

Assess for:
· Abdominal / retroperitoneal abrasions / contusions
· Penetrating injuries
· Hypotension (systolic BP <90mmHg)
· Abdominal Evisceration(s)
· Abdominal pain on palpation
· Hematuria, bloody stool
· Altered bowel sounds
· Vomiting blood
· History of abdominal injury / trauma
· Suspected injury secondary to mechanism of trauma

Administer / initiate:
· Cervical spine stabilization / immobilization
· High flow O2 via nonrebreather
· If respirations <10 or >30/min ventilate with BVM
· Stop any life threatening hemorrhaging
· 1-2L IV of NS or LR TKO
· Cardiac monitoring

Is systolic BP <90mmHg or *Peds-normal for age?*

YES
· Administer 20cc/kg NS or LR bolus as necessary
· Reassess for changes *(Peds - 20 cc/kg NS or LR)*
· Target Systolic BP is 100-110

NO

Is patient pregnant past 1st trimester?

YES
· Place patient in left lateral recumbent position

NO

Are penetrating objects present?

YES
· Stabilize object(s)
· Reassess for changes

NO

Is evisceration present?

YES
· Cover evisceration(s) with saline soaked trauma dressing

· Place patient supine with legs elevated and flexed at knees and hips
(providing C-spine immobilization is not applied)
· Contact medical control without delay
· Reassess for changes

EMERGENCY PROTOCOL
7.h MUSCULOSKELETAL TRAUMA

Assess for:
- Mechanism of injury
- Direction of applied forces
- Hypotension (systolic BP <90mmHg)
- Estimated volume loss
- Treatment / movement prior to arrival
- Past medical history, medications
- ETOH / drug use
- Deformity(ies), swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability
- Decreased / loss of function, pulses. sensation of distal extremities

Administer / initiate:
- Cervical spine stabilization / immobilization as necessary
- High flow O2 via nonrebreather
- If respirations <10 or >30/min ventilate with BVM
- Stop any life threatening hemorrhaging
- 1-2L IV of NS or LR TKO, or saline lock
- Cardiac monitoring
- Consider applying MAST as splint (inflate to air splint quality)
- Splint fractures per protocol

Is systolic BP <90mmHg or in *Peds - nl for age?*

YES →
- Administer 20cc/kg NS or LR bolus as necessary
  (Peds - bolus 20 cc/kg NS or LR)
- Reassess for changes

NO ↓

Is patient pregnant past 1st trimester?

YES →
- Place patient in left lateral recumbent position

NO ↓

Are penetrating objects present?

YES →
- Stabilize object(s)
- Reassess for changes

NO ↓

Are isolated extremity injuries present?

YES →
- Cover open fractures / lacerations with sterile dressing
- Splint fractures per protocol
  (check distal motor/sensory/pulse pre-/ post-splinting
- Apply ice if noted swelling / pain
- Avoid unnecessary movement
- DO NOT DELAY TRANSPORT IF OTHER TRAUMA

STANDING ORDER
May administer Narcotic Pain Medications per protocol for isolated extremity injury

· Contact medical control without delay, May give meds below if Isolated Injury:
- **Morphine Sulfate 2-5mg slow IV or Stadol 2-5mg IV or Nubain 2-10mg (contraindicated in multi-system trauma/pregnancy)**
  Use Morphine cautiously in Peds
- **Nitrous oxide via self administration (contraindicated in multi-system trauma/pregnancy)**
- **Reassess for changes**

EMERGENCY PROTOCOL
7.i SOFT TISSUE TRAUMA / CRUSH INJURIES

Assess for:
- Mechanism of injury
- Direction of applied forces
- Hypotension (systolic BP <90mmHg)
- Estimated volume loss
- Treatment / movement prior to arrival
- Past medical history, medications
- ETOH / drug use
- Deformity(ies), swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability
- Decreased / loss of function, pulses. sensation of distal extremities

Administer / initiate:
- Cervical spine stabilization / immobilization as necessary
- High flow O2 via nonrebreather
- If respiration's <10 or >30/min ventilate with BVM
- Stop any life threatening hemorrhaging
- 1-2 IV of NS or LR TKO or saline lock
- Cardiac monitoring
- Consider applying MAST as splint (inflate to air splint quality)
- Splint fractures per protocol
- Remove tight / constrictive clothing

Is systolic BP <90mmHg?
YES →
- Administer 10-20cc/kg NS or LR bolus as necessary
- Reassess for changes

NO

Is patient pregnant past 1st trimester?
YES →
- Place patient in left lateral recumbent position

NO

Are penetrating objects present?
YES →
- Stabilize object(s)
- Reassess for changes

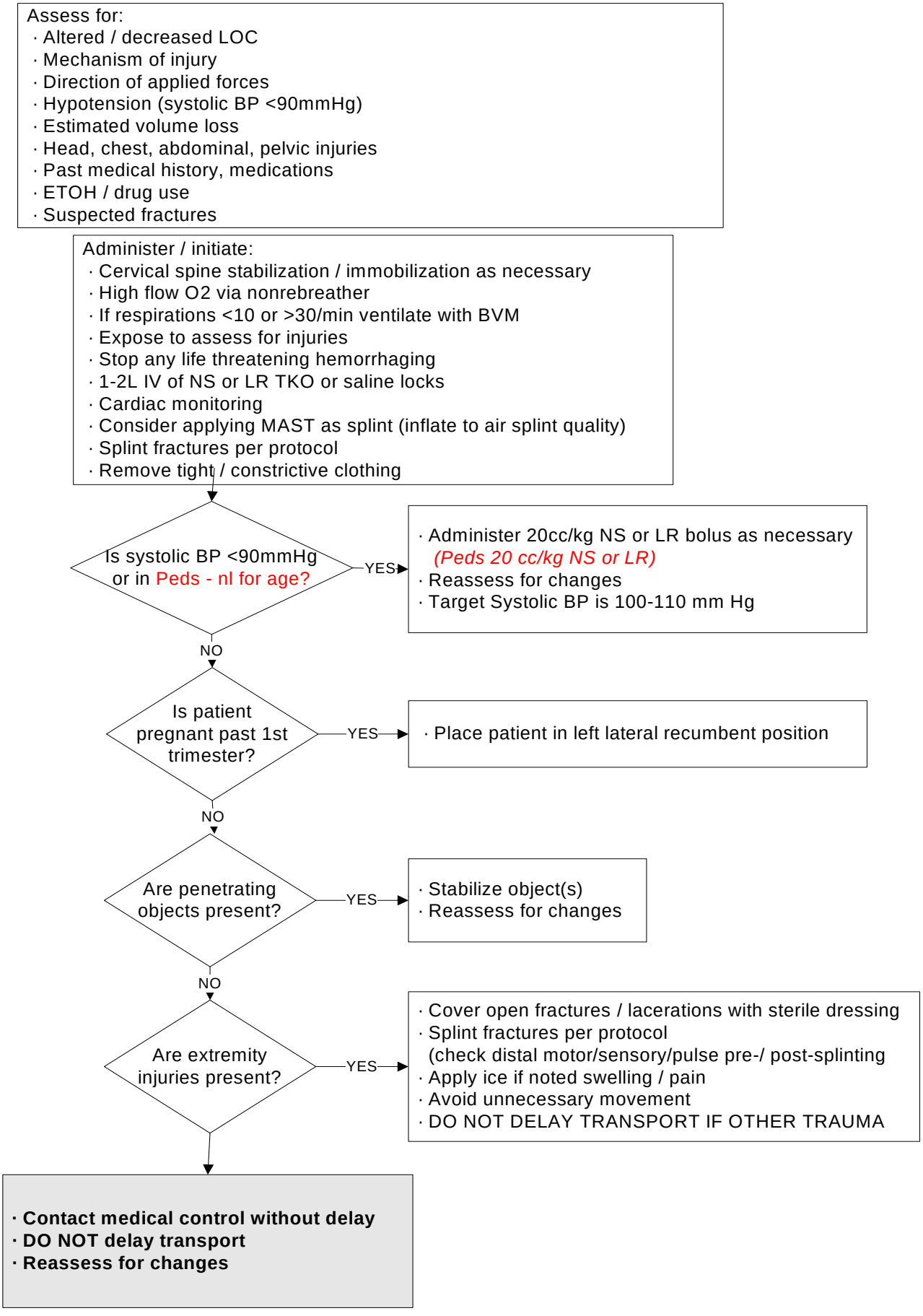
NO

Are isolated extremity injuries present?
YES →
- Cover open fractures / lacerations with sterile dressing
- Splint fractures per protocol (check distal motor/sensory/pulse pre-/ post-splinting
- Apply ice if noted swelling / pain
- Avoid unnecessary movement
- DO NOT DELAY TRANSPORT IF OTHER TRAUMA

STANDING ORDER
May administer Narcotic Pain Medications per protocol for isolated extremity injury

· Contact medical control without delay, and May give meds below if Isolated Injury:
- **Morphine Sulfate 2-5mg slow IV or Stadol 2-5mg IV or Nubain 5-10 mg IV (contraindicated in multi-system trauma/pregnancy)**
- **Nitrous oxide via self administration (contraindicated in multi-system trauma/pregnancy)**
- **Sodium Bicarbonate 1mEq/kg IV up to 50mEq if prolonged entrapment with extensive muscle damage**

EMERGENCY PROTOCOL
7.j MULTI-SYSTEM TRAUMA



EMERGENCY PROTOCOL
7.k TRAUMATIC AMPUTATION(S)

Assess for:
- Mechanism of injury
- Hypotension (systolic BP <90mmHg)
- Treatment / movement prior to arrival
- ETOH / drug use
- Deformity(ies), swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability
- Decreased / loss of function, pulses. sensation of distal extremities
- Direction of applied forces
- Estimated volume loss
- Past medical history, medications

Administer / initiate:
- Cervical spine stabilization / immobilization as necessary
- High flow O2 via nonrebreather
- If respirations <10 or >30/min ventilate with BVM
- Stop any life threatening hemorrhaging
- 1-2L IV of NS or LR TKO or saline locks
- Cardiac monitoring
- Consider applying MAST as splint (inflate to air splint quality)
- Splint fractures per protocol
- Remove tight / constrictive clothing

Is systolic BP <90mmHg or in Peds - nl for age?

YES →
- Administer 20cc/kg NS or LR bolus as necessary *(Peds 20 cc/kg NS or LR)*
- Reassess for changes

NO ↓

If amputated part is recovered?

YES →
- Rinse part(s) with NS
- Wrap in moist dressing
- Place in plastic bag
- Transport with patient**

DO NOT delay transport of critical patient to retrieve amputated part(s)

NO ↓

If isolated extremity injuries present?

YES →
- Cover open fractures/lacerations/injuries with sterile dressing
- Splint fractures per protocol (check distal motor/sensory/pulse pre-/ post-splinting
- Apply ice if noted swelling / pain
- Avoid unnecessary movement
- DO NOT DELAY TRANSPORT IF OTHER TRAUMA

STANDING ORDER
May administer Narcotic Pain Medications per protocol for isolated extremity injury

- **Contact medical control without delay, and May give meds below if Isolated Injury:**
  - **Morphine Sulfate 2-5mg slow IV or Stadol 2-5 mg IV or Nubain 5-10mg IV (contraindicated in multi-system trauma/pregnancy)**
  - **Nitrous oxide via self administration (contraindicated in multi-system trauma/pregnancy)**
  - ***(Peds - do not use morphine or nitrous[< 6 y/o or unable to self administer])***
- **DO NOT delay transport to appropriate facility**
- **Reassess for changes**

EMERGENCY PROTOCOL
7.I THERMAL BURNS / TRAUMA - ELECTROCUTION

Assess for:
- Mechanism of injury / thermal product / agent
- Signs of airway insult / injury
  - carbonaceous sputum
  - singed nasal hairs
  - soot in oropharynx
  - wheezing / hoarseness
  - tachypnea / hypoxia
  - decreasing respiratory status
- Hypotension (systolic BP <90mmHg)
- Treatment / movement prior to arrival
- Past medical history, medications
- ETOH / drug use
- Deformity(ies), swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability
- Decreased / loss of function, pulses. sensation of distal extremities
- Extent of burns
  - degree of burn(s)
  - rule of nines score/percentage
- Associated injuries / trauma

Administer / initiate:
- Cervical spine stabilization / immobilization as necessary
- High flow O2
- If respirations <10 or >30/min intubate and ventilate with BVM
- If wheezing present, consider Albuterol 2.5mg/3cc every 3-5min
- Stop any life threatening hemorrhaging
- 1-2L IV of NS or LR TKO
- Cardiac monitoring
- Consider applying MAST as splint (inflate to air splint quality)
- Splint fractures per protocol
- Remove tight / constrictive clothing jewelry

Is systolic BP <90mmHg?

YES
- Administer 20cc/kg NS or LR bolus as necessary
- Reassess for changes

NO

Cover burns

- Rinse involved areas with water/NS if indicated to clean burns
- Cover with dry sterile dressing/burn sheet
- Prevent patient hypothermia
- DO NOT delay transport of critical patient

STANDING ORDER
May administer Morphine, Nubain, or Stadol per protocol for isolated extremity burns

If isolated extremity injuries present?

YES
- Cover open fractures/lacerations/injuries with sterile dressing
- Splint fractures per protocol (check distal motor/sensory/pulse pre-/ post-splinting
- Apply ice if noted swelling / pain
- Avoid unnecessary movement
- DO NOT DELAY TRANSPORT IF OTHER TRAUMA

- **Contact medical control without delay, May give meds below if Isolated Injury:**
  - **Morphine Sulfate 2-5mg slow IV or Stadol 2-5mg IV or Nubain 5-10mg IV (contraindicated in multi-system trauma/pregnancy)**
- **DO NOT delay transport to appropriate facility**
  - **Consider aeromedical transport to burn center**
- **Reassess for changes**

EMERGENCY PROTOCOL
7.M SEXUAL ASSAULT

Assess for:
- **Traumatic injuries (if present treat per specific protocol)**

- **Be calm, caring and sensitive toward patient**
- **DO NOT make unnecessary physical contact with patient**
- **Have witness same sex as victim present at all times if possible**
- **Protect the victim's privacy:**
  - **Wrap plastic sheet around victim if possible**
- **DO NOT inspect genitals unless evidence of uncontrolled hemorrhage, trauma or severe pain is present**

↓

DO NOT ALLOW PATIENT TO SHOWER OR DOUCHE

↓

- **Collect all of patient's clothing involved when possible**
- **Place clothing in plastic sheet or separate paper bags with ID labels and location found**

↓

- **Transport patient to appropriate facility for treatment and examination**
- **Leave all linen / sheets placed in plastic / paper bag with patient at facility**
- **Notify staff of clothing and linen samples**

EMERGENCY PROTOCOL
7.N Family Violence

ASSESSMENT
· Fear of a household member
· Reluctance to respond when questioned
· Unusual isolation, unhealthy, or unsafe living environment
· Poor personal hygiene/ inappropriate clothing
· Conflicting accounts of the incident
· History inconsistent with an injury or illness
· Indifferent or angry household member
· Household member refused to permit transport
· Household member prevents pt from interacting openly or privately
· Concern about minor issue but not major ones
· Household with previous violence
· Unexplained delay in seeking treatment

Direct questions: (Asked in the ambulance when patient is alone and only if time is available.)
1) Has anyone at home ever hurt you?
2) Has anyone at home touched you without your consent?
3) Has anyone ever made you do things you didn't want to do?
4) Has anyone taken things that were yours without asking?
5) Has anyone scolded or threatened you?
6) Are you afraid of anyone at home?

SIGNS AND SYMPTOMS (Should be noted on the chart)
-Injury to soft tissue areas that are normally protected (thighs, stomach, or upper arms).
-Bruise or burn in the shape of an object
-Bite marks - intra canine distance of bites of the maxillary aspect of > 3 cm is not caused by a child.
Bites and burns should be viewed very suspiciously
-Rib fracture in the absence of major trauma such as motor vehicle accident
-Multiple fracture in various stages of healing

TREATMENT:
1. If you feel you are in danger, or the child appears to be in immediate danger and the parent or guardian refuses to allow transport, call for police assistance.
2. Patient care is your first priority.
3. If possible, remove patient from situation and arrange for transport to hospital. For children, you must have the parent's permission to transport unless there is a life-threatening emergency.
4. If sexual assault is suspected, remember to preserve all potential evidence. Do not allow the patient to bathe or go to the bathroom. Bring all clothes with patient to the hospital.
5. In obtaining information from parent or caregiver, do not accuse. You may not be sure of who is the actual abuser, and making them defensive will not assist the patient.
6. Do not judge, do your best to remain objective. Carefully and fully document in a factual manner whatever you are told and what you observe.
7. Report suspected abuse to the hospital personnel after arrival. Make verbal and written report.
8. Maintain your professionalism despite any emotional impact the scene or the abused child may have.

8A. OBSTETRICAL EMERGENCIES
Normal Delivery

Assessment

Due date
Presence of Meconium
Possibility of Multiple Births
Frequency of Contractions

Standing Orders

1. Oxygen at flow rate appropriate to patient's condition (intubate prn)
2. IV NS KVO if patient in active labor defined as regular contractions q 3 - 5 mins. with 30 - 60 second duration.
3. Use gentle pressure to control delivery. When head delivers suction airway & check for cord around neck
4. After delivery clamp cord @ 8 and 10 inches and cut between clamps
5. Dry infant and wrap to keep warm. Maintain airway
6. Check A.P.G.A.R. Score at 1 and 5 minutes after delivery (see index I5)
7. Give infant to mother and do not allow her to nurse, allow placenta to deliver
    a. Massage uterine fundus (lower abdomen) if bleeding persist
    b. Observe and treat signs of shock with increased delivery of oxygen and IV fluids
    c. Be alert to the possibility of multiple births

Infant:

1. Protect against explosive delivery
2. When head delivers suction airway (mouth first then nose) & check for cord around neck
3. After delivery clamp cord @ 8 and 10 inches from baby and cut between clamps
4. Dry infant and wrap to keep warm (silver swaddler). Maintain airway, suction PRN
5. Oxygen 100% and airway maintenance appropriate to patient's condition
6. Check A.P.G.A.R. Score at 1 and 5 minutes after delivery
7. DO NOT allow infant to nurse until both have been evaluated in the Emergency Department
8. Re-evaluate cord for bleeding, add additional clamp if necessary and re-evaluate
9. Keep infant on same plane as mother until cord is clamped and cut
10. ECG monitor prn

Considerations

- ***The greatest risks to the newborn infant are airway obstruction and hypothermia. Keep the infant warm, dry, covered, and its airway maintained with a bulb syringe. Always remember to squeeze the bulb prior to insertion into the infant's mouth or nose.***
- The greatest risk to the mother is post-partum hemorrhage. Watch closely for sign of hypovolemic shock and excessive vaginal bleeding.
- Consider the possibility of pregnancy in any female of childbearing age with complaints of vaginal bleeding, menstrual cycle irregularity, abdominal pain, cramping, or low back pain not associated with a traumatic injury.
- Record a blood pressure and the presence or absence of edema in every pregnant woman you examine -- no matter what the chief complaint.
- Sontaneous or inducted abortions may result in copious vaginal bleeding. Reassure the mother, elevate legs, treat for shock, and transport.

Apgar scoring

Clinical Sign	**0 Points**	**1 Point**	**2 Points**
Appearance	Blue/Pale	Body Pink Extremities Blue	Completely Pink
Pulse	Absent	Below 100/minute	Above 100/minute
Grimace	No response	Grimace	Cries
Activity	Limp	Some flexion of extremities	Action Motion
Respiratory	Absent	Slow/Irregular	Good strong cry

The Apgar Score should be calculated after birth of the infant. The five (5) clinical signs are evaluated according to the scoring system detailed above. Each sign is assigned points to be totaled. A total score of 10 indicates that the infant is in the best possible condition. A score of 4 to 6 indicates moderate depression and a need for resuscitative measures.

DO NOT delay resuscitation efforts to obtain APGAR score. Obtain APGAR at 1 and 5 minute after delivery.

Note: The best possible score for an one minute APGAR is nine (9)

Breech Presentation

Standing Orders

1. Oxygen at flow rate appropriate to patient's condition
2. IV NS KVO
3. Allow the delivery to progress spontaneously
4. Support the infant's body with the palm of your hand as it delivers
5. If the head delivers spontaneously, deliver the infant as per standard protocol
6. If the head does not deliver within 3 minutes, or if spontaneous respirations have begun, insert a gloved hand into the vagina to create an airway for the infant and relieve compression of the umbilical cord against the infants head.
7. Transport immediately and **Do Not** remove your hand until relieved by hospital staff or spontaneous delivery

Limb Presentation

Standing Orders

1. Oxygen appropriate to patient's condition, IV NS KVO
2. Place mother in Knee-Chest Position or elevate the buttocks
3. Transport immediately, notify hospital

Prolapsed Cord

Standing Orders

1. Oxygen 100 % and appropriate to patient's condition (intubate prn), IV NS KVO
2. Place mother in Trendelenburg position or knee to chest position or elevate hips
3. Insert a gloved hand into the vagina and gently push the infant's head off of the cord. Check for cord pulsations. Do not attempt to push cord back.
4. Transport immediately and **Do Not** remove your hand until relieved by hospital staff

8.b OBSTETRICAL EMERGENCIES

Abruptio Placentae

A. Assessment

Multiparity
Maternal hypertension
Trauma
Drug Use
Increased Maternal age
History
Vaginal bleeding with no increase in pain
No bleeding with sharp low abdominal pain

B. Treatment - Standing Order

1. Oxygen 100% and airway maintenance appropriate to the patients condition
2. I.V. L.R. K.V.O.
3. Position patient in left lateral recumbent position
4. Transport ASAP
5. Contact Medical Control

Amniotic Sac Presentation

A. Assessment

Amniotic Sac visible
Membrane not broken
Fetus may or may not be visible
Pre-natal medications, problems, and care
Usually Third Trimester
Abdominal pain
Indications of immediate delivery

B. Treatment - Standing Order

1. Oxygen 100% and airway maintenance appropriate to the patients condition
2. Place patient in position of comfort
3. Establish IV LR or NS @KVO
4. Contact Medical Control ASAP
5. Amniotic Sac
    a. if no fetus visible cover presenting part with moist, sterile dressing and begin transport
    b. if fetal Head is delivering, tear sac with fingers and continue steps for delivery

8.c OBSTETRICAL EMERGENCIES

Pre-eclampsia and Eclampsia

A. Assessment

Patient Para & Grava
Term of pregnancy in weeks
Vaginal bleeding
Pre-natal medications, problems, and care
Membrane Ruptured
Usually begins after the twentieth week of pregnancy
Most often affects women during their first pregnancy
May have a history of chronic hypertension and/or diabetes
May experience hypertension and edema
May experience headaches, blurred vision, and abdominal pain
May experience seizures which indicates a progression from pre-eclampsia to eclampsia

B. Treatment – Standing Order

1. 100% Oxygen and airway maintenance appropriate to patient's condition.

2. Place patient in recumbent position on her left side.

3. Establish IV LR or NS, large bore @ KVO

4. Valium 5 mg slow IV PRN or Versed 3mg IVP at the onset of generalized seizure activity.

C. Treatment - Protocol

Contact medical control and consider: Magnesium Sulfate 1-4 gms Slow IV

Note: Record a blood pressure and the presence or absence of edema in every pregnant woman you examine no matter what the chief complaint.

8.d Obstetrical Emergencies

Meconium Stain

A. Assessment

Patient Para & Grava
Term of pregnancy in weeks
Vaginal bleeding
Pre-natal medications, problems, and care
Membrane Ruptured
Amniotic fluid that is greenish or brownish-yellow
Fecal material expelled with the amniotic fluid

B. Treatment – Standing Order

1. Do not stimulate respiratory effort before suctioning the oropharynx

2. Suction the **mouth, then the nose** while simultaneously providing Oxygen 100% by blow-by method and while maintaining the airway appropriate to the patient's condition

3. Obtain an A.P.G.A.R. score after airway treatment priorities. Score at one minute after delivery and at five minutes after delivery. (Time permitting)

4. Repeat initial assessment and complete vital signs until patient care is transferred to the appropriate ER staff

8.e OBSTETRICAL EMERGENCIES

Placenta Previa

A. Assessment

Painless bleeding which may occur as spotting or recurrent hemorrhage
Bright red vaginal bleeding after 7th month
History
Multiparity
Increased maternal age
Recent sexual intercourse or vaginal exam
Patient Para & Grava
Term of pregnancy in weeks
Pre-natal medications, problems, and care
History of bed rest
Placenta protruding through vagina

B. Treatment - Standing Order

1. Oxygen 100% and airway maintenance appropriate to the patients condition
2. IV NS or LR
3. Position of comfort
4. Transport ASAP
5. Contact Medical Control

Note: Any painless bleeding in the last trimester should be considered Placenta Previa until proven otherwise

If there are signs of eminent delivery membrane rupture is indicated followed by delivery of the baby. The diagnosis of eminent delivery depends on the visual presence of the baby, or body part through the membrane

ETHICS

9.A. WITHHOLDING /WITHDRAWAL OF LIFE SUPPORT

Life Support May Be Withheld In The Following Circumstances:

1) Obviously dead patients with dependent lividity, rigor mortis, tissue decomposition or massive trauma such as evacuation of the cranial vault..
2) Patients without vital signs who cannot be accessed for treatment due to entrapment for prolonged time.
3) Severe blunt trauma with absence of vital signs and pupillary response.
4) When presented a valid Do Not Resuscitate (DNR)or Physician Orders for Scope of Treatment (POST) Order or when the patient's private physician takes direct responsibility for withholding resuscitation efforts.

   Do Not Resuscitate or Physician Orders for Scope of Treatment (POST) orders which are not on the Official State Form can be accepted if it is a DNR documented in a medical record such as nursing home chart, hospice care, or home nursing.

Once life support has been initiated in the field, in order to discontinue life support, the paramedic must contact Medical Control. The following conditions must be met:

1. Asystole is present on the ECG in two leads ninety degrees apart, **and**
2. The patient had fixed, dilated pupils prior to the administration of Atropine, **and**
3. There is absence of pulse, respirations, and neurological reflexes **and** at least one of the following conditions is met:

   a. Endotracheal intubation has been confirmed, the patient has been well-ventilated with 100 % oxygen and multiple (at least three) administrations of Epinephrine and Atropine have not been effective in generating an ECG complex
   b. Transcutaneous Pacing, if available, has not been effective in generating an ECG complex
   c. Obvious signs of death in the absence of Hypothermia, cold water drowning, lighting strikes, or drug induced coma.

In addition to:

a. The E.M.S. provider documented lack of CPR for 10 minutes, or
b. Prolonged resuscitation in the field without hope for survival, or
c. Massive trauma such as evacuation of cranial vault, etc., or
d. Severe blunt trauma with absence of vital signs and pupillary response

Upon termination in the field any tubes, needles and IV lines will be left in place (IV lines to be tied off and cut with catheter left in place).

9.B.
TERMINALLY ILL PATIENTS

1. Maintain a calm environment and avoid automatically performing heroic and perhaps inappropriate measures beyond basic life support.
2. Elicit as much information from persons present who are familiar with the patient's condition as possible.
3. Get the name and telephone number of the patient's physician if -possible.
4. Maintain B.L.S. procedures and contact Medical Control as soon as possible. Provide full information on the patient's present condition, history, and the name of the patient's physician and telephone number.
5. Medical control will direct management of the call.
6. Acceptable DNR/POST forms:
   State Form
   Signed Order in Medical Record such as Nursing Home, Hospice

   Copies of DNR/POST Forms (including signatures) are acceptable

9.C. PHYSICIAN ON SCENE

PROCEDURE:

1. EMT/Paramedic shall:

    - Inform the physician that the EMT/Paramedic must contact Medical/Trauma Control. The care being rendered by the EMT/Paramedics is under Medical Control until relinquished.
    - Inform Medical/Trauma Control of the presence of a physician on scene.
    -

2. Medical/Trauma Control may:

    - Speak to the physician to determine qualifications.
    - Request EMT/Paramedic to verify licensure of the physician.
    - Relinquish total responsibility for the patient to the on-scene physician

3. Physician (intervening) may:

    - Offer assistance but allow the EMT/Paramedic to remain under Medical/Trauma Control; or,
    - Request to talk to Medical/Trauma Control to offer medical advice and assistance; or,
    - Take total responsibility for the care given by the EMT/Paramedic, if okay with Medical Control, then physically accompany the patient to the hospital where responsibility is assumed by the receiving physician; and shall,
    - Sign for all instructions given to EMTs/Paramedics.
    - Maintain Medical/Trauma Control contact whenever possible.

4. If the patient's private physician intervenes in person or by telephone the EMT/Paramedic shall:

    - Inform the physician that the EMT/Paramedic must contact Medical/Trauma Control.
    - Request the patient's physician to contact Medical/Trauma Control. Once contacted # 3 prevails.
    - At no time should any orders be taken over the telephone except from Medical/Trauma Control.

9.D. PATIENT REFUSAL OF CARE - NO PATIENT TRANSPORT SITUATIONS

A.Assessment

- Determine presence of injury and desire for transport
- Identify person who made EMS call
- Reason for refusal

B.Standing Orders

- Perform and document mini-mental status exam to confirm competency to refuse care
- Confirm and document the absence of intoxicating substances or injury
- Confirm patient is of legal age of majority or emancipated minor
- Document mechanism of injury or circumstances of illness
- Document pertinent past history
- Perform vital signs and problem directed exam

C. The Following may not refuse transport:

- Patients with impaired judgement
- Minors (if not 18 years of age or older or emancipated)
- All minors must have refusal from parent or guardian, not older sibling or other relative
- Do not release minors on scene without guardian consent

D. Reasons for Non Transport

- Minor illness or injury and acceptable alternative transportation available.

ADDITIONAL INFORMATION MINI MENTAL STATUS EXAM

Orientation to time - time of day, day, week, month, year	5 pts maximum
Orientation to place -building, street, city, state, country	5 pts maximum
Say “boy, dog, ball” and have them repeat it	3 pts maximum
Ask patient to spell world backward, or do serial 3s backwards from 20	5 maximum
Without repeating the words, ask them to repeat the previous 3 words	3 pts maximum
Ask patient to do the following after you have completed the request “stick out tongue and touch right hand to left ear”	3 pts maximum
Ask the patient to identify your pen and watch	2 pts maximum
Ask patient to read the following sentence and then do as it says “shut your eyes”	1 point
Ask the patient to write a sentence	1 point
Ask the patient to draw two overlapping pentagons (show them an example picture)	1 point

A score of 21 or better is considered mentally competent by most psychiatrists for a patient to make independent decisions.

9.E. **FIELD DETERMINATION OF DEATH**

ASSESSMENT
Pulseless, non-breathing patients fall into one of two categories:

- Patients with **definitive signs of death**.
- Patients without definitive signs of death. Patients not having definitive signs of death must receive resuscitation unless a properly executed Do-Not-Resuscitate Order or POST Form is presented.

Definitive Signs of Death. If there is any question, CPR should be initiated. The patient must have **at least one** of the following conditions;

1. Rigor Mortis
2. Dependent Lividity
3. Decomposition of body tissues.
4. Devastating, unsurvivable injury(s) - an injury clearly incompatible with life
5. Decapitation
6. Incineration
7. Separation of vital internal organs from the body or total destruction of organs, *or*
8. Gunshot wound to the head that clearly crosses the midline (entrance & exit).

DNR orders

- If a family member or care giver can produce a properly executed DNR Order or POST Order, resuscitation can be withheld.
- Treat patients with known DNR orders appropriately, just do not initiate CPR if they develop cardiovascular or respiratory arrest.
- When there is any doubt about what to do, begin resuscitative efforts with all skills available.

Resuscitation has been initiated prior to EMS arrival.

Anytime CPR or an attempt at resuscitation has been initiated by anyone at the scene, resuscitative efforts will be continued until:

1. A **physician** directs the team to stop (either on-line or on-scene)
   Note: If resuscitation efforts are terminated on the order of a physician, that physician's name and the time that death is determined must be documented on the EMS Medical Record.
2. It is determined the patient meets the criteria for "definitive signs" of death
3. A properly executed **DNR Order form** or **POST Form** is presented.

Note These criteria have been approved by the State Medical Examiner

9. f. CONSENT ISSUES

Minors

- Minors are defined in Tennessee as being less than eighteen (18) years old.
- Law does not allow a minor allowed to accept or refuse treatment.

Exceptions

- A minor who is married
- A minor not living in their parent's home **may** be legally considered an "emancipated minor".

9. G. CONSENT ISSUES

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- Exceptions
  - A minor who is married
  - A minor not living in their parent's home may be legally considered an "emancipated minor".

9.G. PROCEDURE FOR DEVIATION FROM PROTOCOLS

Standing Order

- Never simply disregard a standing order or protocol

If, in your judgment, the protocol is not in the best interest of the patient, CONTACT MEDICAL CONTROL, for permission to deviate. Document the rationale for deviation, and the name of the physician giving the order

9.I. PROCEDURES FOR DOWNGRADING FROM ALS TO BLS

- Dispatch should obtain adequate information to allocate proper EMS response.
- Once on the scene, the EMT/Paramedic is responsible for determining the level of care needed.
- Paramedics are required to provide patient care during transport for any of the following:
  - Use of cardiac monitor
  - Use of any IV admixture
  - Medical control orders for the transport include items beyond the scope of practice of other transport personnel.
  - The condition of the patient is likely to deteriorate and require ACLS intervention prior to arrival at hospital.

The ALS provider must not leave the patient until BLS transport has occurred.

MISCELLANEOUS

10.A. Avulsed Teeth

Avulsed teeth may be handled in much the same manner as small parts; i.e. rinse in normal saline (do not rub or scrub) and place in moistened gauze, but there is no need to cool with ice.

Reimplantation is recommended if possible at the scene as this creates maximum possibility of re-attachment as minutes count. The following guidelines pertain to reimplantation at the scene:

(a) Applicable only for permanent teeth (i.e., with patients over 6.5 years of age)
(b) Applicable when only one or two teeth are cleanly avulsed and the entire root is present
(c) Applicable only to anterior teeth (front 6, upper or lower)
(d) The patient must be conscious
(e) Should be attempted within the first 30 mins.; the sooner, the greater success rate
(f) Do not force reimplantation. Gentle insertion is all that is necessary. Slight incorrect positioning can be corrected later.
(g) If reimplantation is not feasible and the patient is a fully conscious adult, then the best procedure is to place the tooth in the mouth, either under the tongue or in the buccal vestibule. This is not recommended in children.

10. b. ALLERGIC REACTION/ANAPHYLAXIS

A. Assessment

Associated with stings or ingestion of allergen

Respiratory signs and symptoms should predominate i.e., dyspnea, bilateral wheezes

Urticaria (hives), generalized erythema (flushed)

B. Standing Orders

1. Oxygen 100 % and airway maintenance appropriate to patient's condition (intubate prn), evaluate cardiac rhythm
2. Start IV, Benadryl 25 mg IVP *(Peds - 1-2 mg/kg)*
3. Administer Solumedrol 62.5-125 mg IVP (Peds- Contact Medical control for authorization for solumedrol)

If Signs of Shock

1. Epinephrine 1:1000 0.01 mg/kg IM up to 0.3 cc total single dose
2. Two large bore IV's LR (large bore); the primary is to be regulated at a rate to maintain the Systolic BP of 90mmHg. The second is to be run KVO.

Note: Consider Glucagon 1 mg IV (peds dose 0.05-0,1 mg/kg IV/IO) if no response to epinephrine AND taking beta blockers

CONTACT MEDICAL CONTROL

10. c. AEROMEDICAL EVACUATION.

A scene flight by air ambulance MAY be indicated IF:

The Level - I trauma patient's condition warrants immediate and extreme action **and** the extrication **and / or** transport time is greater than 30 minutes **and** if patient **is not** in trauma full arrest.

Transport time is defined as the length of time beginning when the emergency unit leaves the scene transporting until time of arrival at the emergency department.

Additional criteria:

- Mulitisystem blunt or penetrating trauma with unstable vital signs
- Greater than 25% burns
- Paralysis or spinal injury
- Amputation proximal to wrist or ankle
- flail or crushed chest

Situational Criteria:

- High energy mechanisms
- prolonged entrapment
- multiple casualty incident
-

DO NOT call for air ambulance transport if patient is in traumatic cardiopulmonary arrest. If the patient has no vital signs, they are a trauma full-arrest.

A. The FF/PM in charge of the patient shall have the authority **through** the Incident Commander to disregard the response of the air ambulance.

B. The FF/PM will coordinate with the Incident Commander to insure the helicopter received patient information and landing zone location.

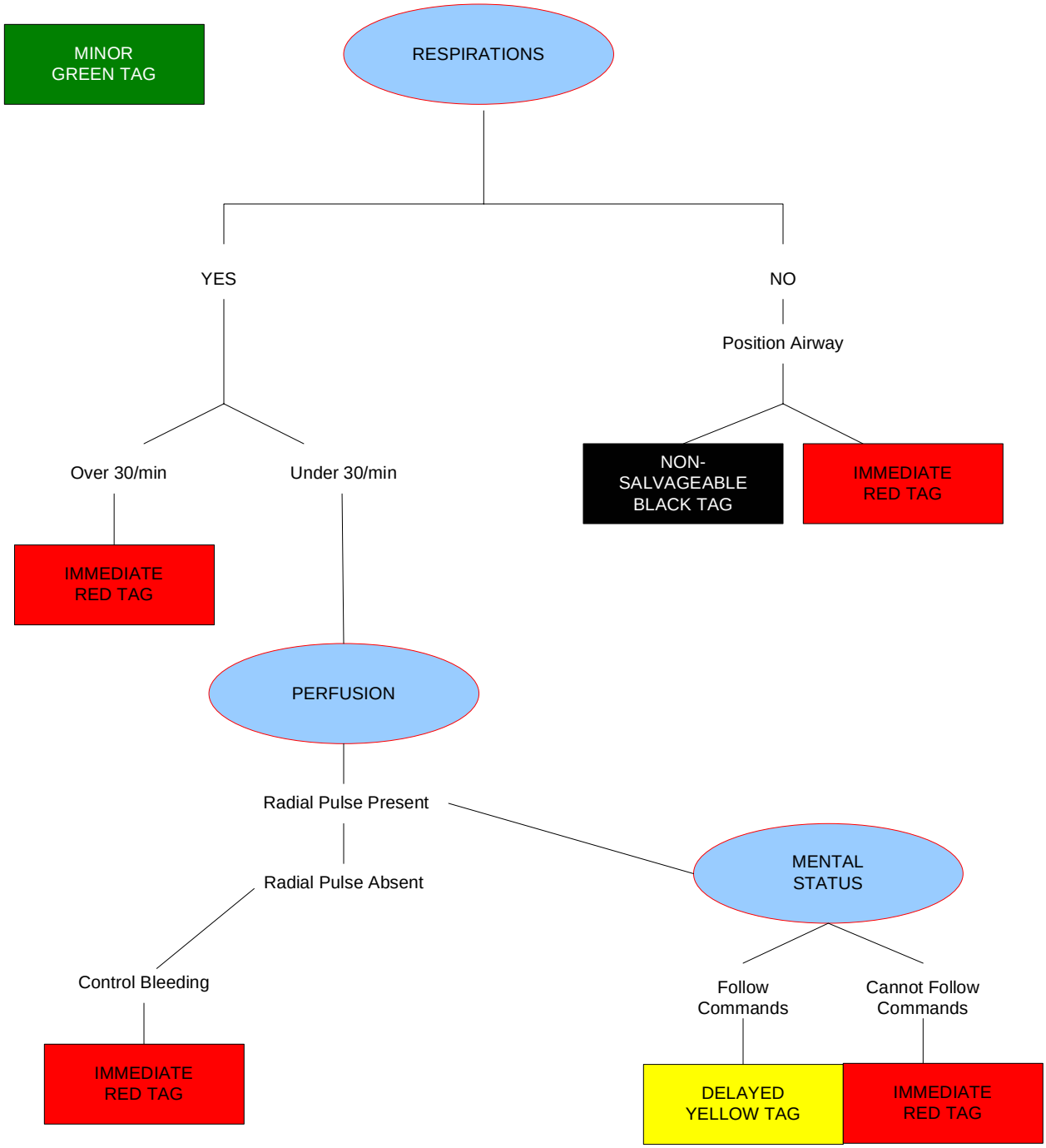
Note: Medical responsibility will be assumed by the medical flight crew personnel upon arrival at the scene and after transfer of care.

Patients will be categorized according to the current Tennessee Trauma Destination Determinates.

Limitations of the helicopter:

a. adults who have a traction splint applied
b. patients over 6' 3"
c. patients who exceed 350 lbs
d. any splint that exceeds the boundary of the long spine board

S.T.A.R.T. TRIAGE



10.e. NON-EMERGENCY INTER-FACILITY ALS TRANSFER.

Standing Orders

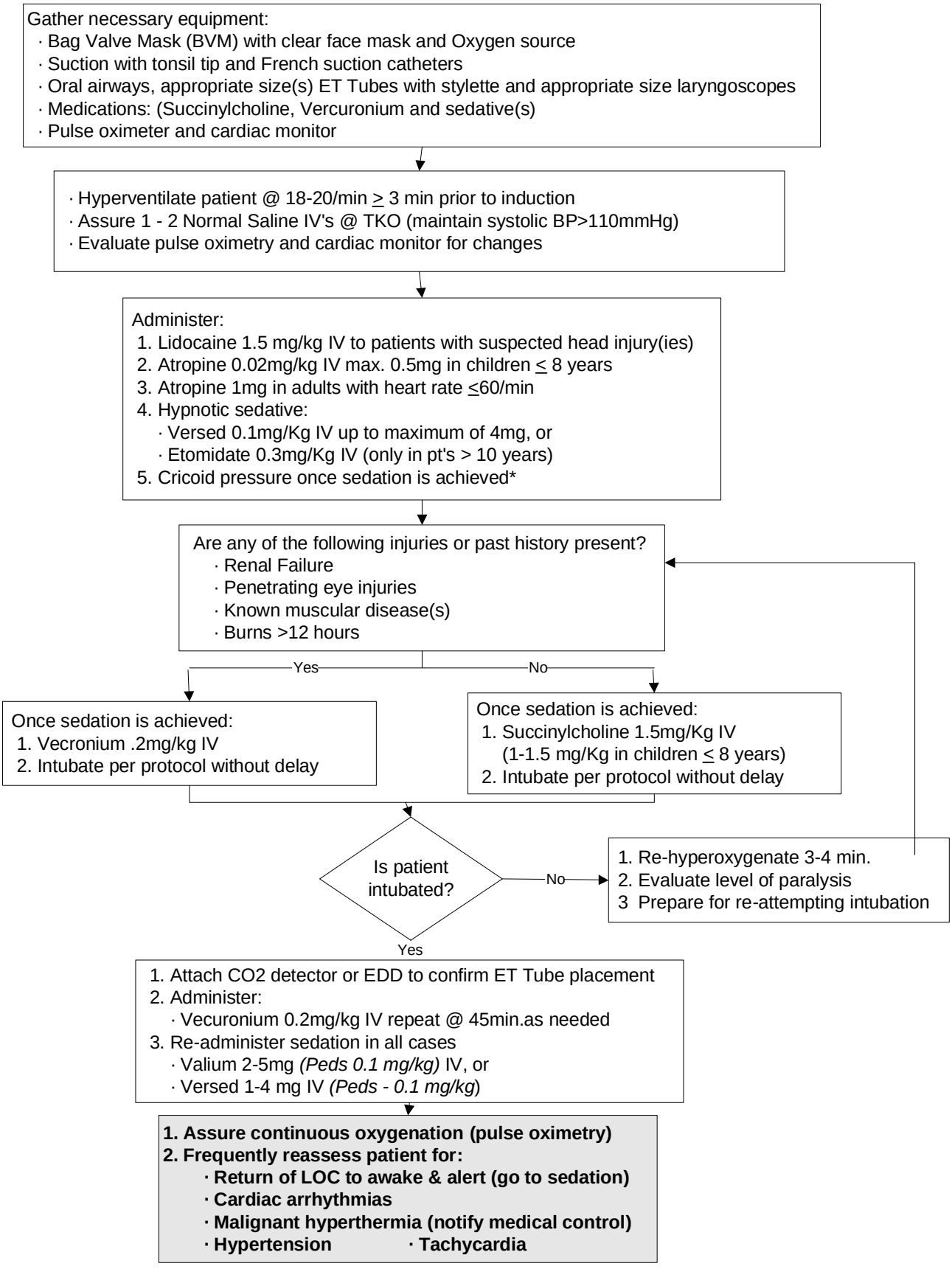
Obtain orders from the transferring physician for the following:

- Oxygen administration
- Any IV infusion, including medication, concentration, dosing rate
- Blood or blood product infusion
- Resuscitation Status
- Copy of appropriate medical record for receiving facility
- Name of physician accepting patient

EMERGENCY PROTOCOL

11.a RAPID SEQUENCE INTUBATION (RSI)

RSI MAY ONLY BE PERFORMED BY PARAMEDICS WHO HAVE BEEN INDIVIDUALLY AUTHORIZED BY THE MEDICAL DIRECTOR TO PERFORM THESE SKILLS.



* Cricoid pressure must be maintained until patient is intubated and ET tube is secured

EMERGENCY PROTOCOL

11.b SURGICAL CRICOTHYROTOMY (Adults Only)

A SURGICAL CRICOTHYROTOMY MAY ONLY BE PERFORMED BY PARAMEDICS WHO HAVE BEEN INDIVIDUALLY AUTHORIZED BY THE MEDICAL DIRECTOR TO PERFORM THESE SKILLS.

Assemble necessary equipment:
- · Sterile scalpel
- · 6.5 - 7.0 ET or tracheostomy tube, tube securing tape or tie
- · Sterile tracheal hook
- · Alcohol and/or betadine antiseptic swabs
- · Pulse oximeter and cardiac monitor

↓

Place patient supine with neck in neutral position

↓

Prep cricothyroid area using aseptic technique.

↓

Stand / kneel at patient's shoulder of non-dominant hand (usually left shoulder)

↓

Palpate Cricothyroid membrane with the non-dominant index finger while the thumb and long finger and stabilize the trachea

↓

Using scalpel, make an approximately 1 to1-1/2 cm vertical incision over midline of membrane

↓

Push scalpel straight down through cricothyroid membrane and then use scalpel handle to widen incision

↓

Ignore if any bleeding should occur, establishing the airway is most important

↓

With the scalpel in place, slide the tracheal hook into trachea and pull mild rostral (toward head)traction

↓

Withdraw the scalpel and gently insert an ET or tracheostomy tube far enough to get the cuff of the tube into the trachea.

↓

Notify receiving facility of the use of a cricothyrotomy

EMERGENCY PROTOCOL

11.c NEEDLE CRICOTHYROTOMY

Assemble necessary equipment:
· Approved manual jet or pressure ventilator
· 50psi or 15LPM oxygen source
· 16g or larger over the needle IV catheter (TLJV catheter preferred)
· 10cc syringe filled with 5cc Normal Saline
· Alcohol and/or betadine antiseptic swabs
· Pulse oximeter and cardiac monitor

↓

Place patient supine with neck in neutral position

↓

Attach syringe with 5cc of Normal Saline to IV catheter

↓

Prep cricothyroid area using aseptic technique.

↓

Stand / kneel at patient's shoulder of non-dominant hand
(usually left shoulder)

↓

Palpate Cricothyroid membrane with the non-dominant index finger
while the thumb and long finger stabilize the trachea

↓

Insert the catheter through cricothyroid membrane toward the feet at 45 degree
angle while drawing back on syringe and assessing for air bubbles

↓

Aspirate syringe to assure air from trachea is present

↓

Advance catheter off of needle until hub is in contact with skin

↓

Remove syringe and attach ventilation device to catheter hub

↓

While holding catheter / hub in place, ventilate for 1-2 sec while assessing
for chest rise, air exchange and/or subcutaneous emphysema

↓

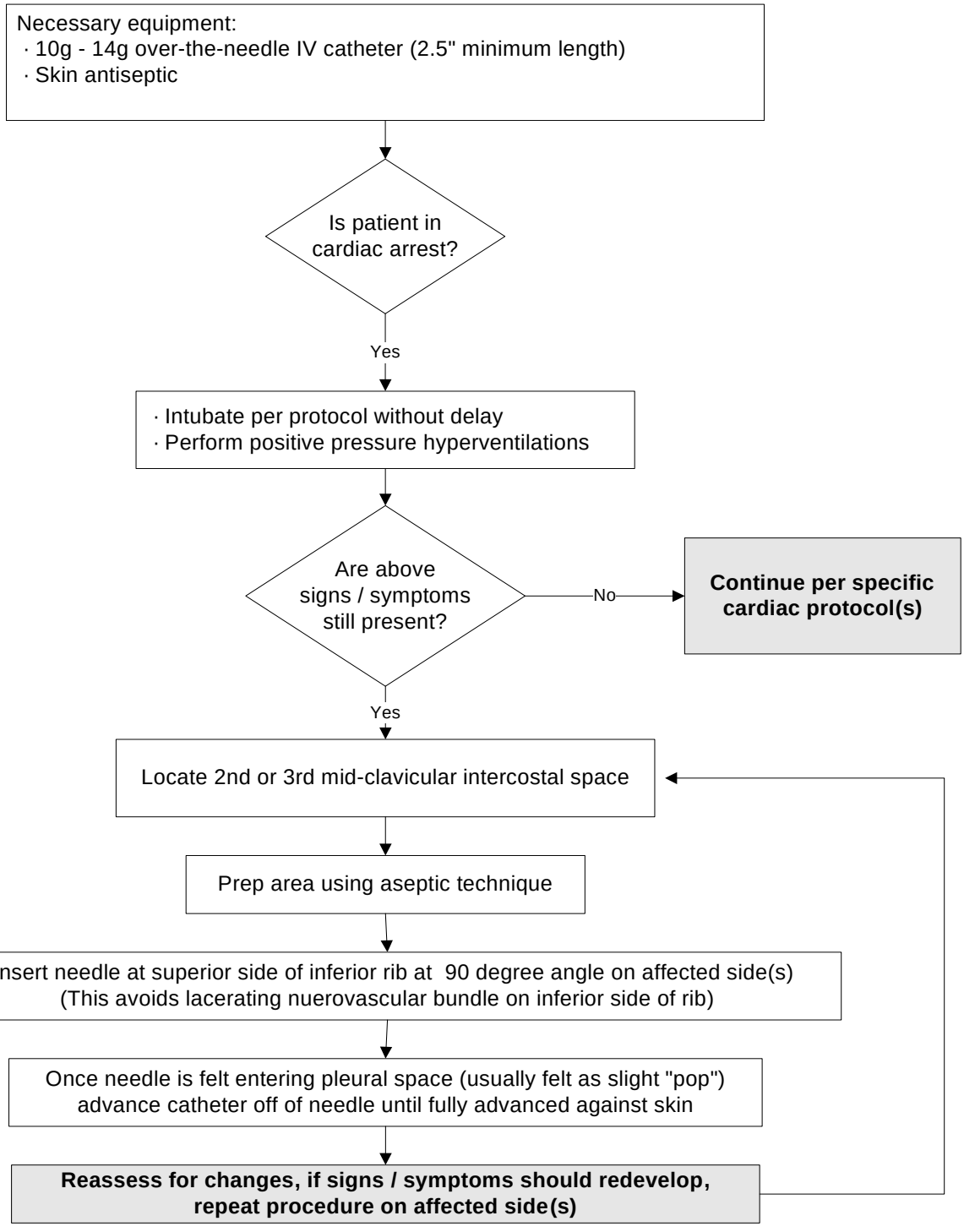
Ventilate at 1sec.on (ventilatory time) and 5 sec. off (expiratory time) (1:5 ratio)
Adjust length of ventilation as necessary

↓

Notify receiving facility of the use of a needle cricothyrotomy

EMERGENCY PROTOCOL
11.d PNEUMOTHORAX - CHEST DECOMPRESSION

INDICATIONS:
Suspect with any of the following signs / symptoms:
- · Severe dyspnea / hypoxia in setting of penetrating or blunt chest trauma
- · Severely decreased lung compliance (Presents as extreme difficulty collapsing BVM)
- · Markedly diminished or absent unilateral breath sounds
- · Distended neck veins.
- · Subcutaneous emphysema
- · Tracheal deviation away from affected side. (Late sign).
- · Cardiac arrest with PEA or history of COPD, asthma or with noted decreased lung compliance



EMERGENCY PROTOCOL (Peds protocol P7a)

11.e INTRAOSSEOUS INFUSION

INDICATIONS:
§ Critically ill, unconscious pediatric patient requiring IV fluids or drugs which cannot be administered by a non-vascular route such as endotracheal tube or PR (per rectum).
§ Traumatic Shock.
§ Seizures with airway compromise.
§ Cardiac Arrest without vascular access.
§ Failure to achieve emergent vascular access by other, more traditional means in ninety (90) seconds.
§ Age 6 yrs. or less
§ Under the direction of Medical Control.
Paramedics who is trained specifically in this procedure and approved by the Medical Director.

CONTRAINDICATIONS:
- o Placement in a fractured bone.
- o Placement distal to a fracture.
- o Infection or burns at the intended site are relative contraindications and Medical Control should advise.

Identify the landmarks for the site :
- · Proximal tibia 1-2 finger breadths (1-3 cm) distal to tibial tuberosity on the anteromedial surface
- · Distal tibia 1-2 finger breadths (1-3 cm) above the medial malleolus at the ankle.

Central Sternal

Prep site with Betadine

Direct and insert needle with the stylet in place perpendicular to the bone or angled slightly away from the joint, avoiding the epiphyseal plate. Insert with pressure and a boring or screwing motion until penetration into the marrow space, which is marked by a sudden lack of resistance.

Remove the stylet

Test for appropriate placement by noting at least one of the following:
- · Aspiration with syringe yields bloody fluid.
- · Infusion of fluid with a syringe does not meet resistance and does not infiltrate.
- · Needle stands without support.

Attach stopcock to the needle and IV tubing to the stopcock.
- · Flow rates to gravity may be unacceptably slow.

Fluids should be "pushed" either with
a syringe attached to the stopcock or
a pressure bag inflated to 300 torr.

Stabilize the needle on both sides with sterile gauze and secure with tape, avoiding tension on the needle. May run any of the following; NS, LR, Atropine, Sodium Bicarbonate (diluted), Diazepam, Dopamine, Epinephrine, Dextrose, Lidocaine, and Steroids, and blood

EMERGENCY PROTOCOL

11.f BEDSIDE GLUCOSE ANALYSIS

INDICATIONS:
- · Loss of consciousness / decreased level of consciousness
- · Suspected head injury / CVA - TIA
- · Seizure(s)
- · Profound bradycardia
- · Suspected hypoglycemia / hyperglycemia
- · Medication / drug / ETOH intoxication or overdose
- · Dehydration / malnourishment
- · Severe liver disease
- . Post Arrest and shock for Peds

Necessary equipment:
- · Glucometer or reagent strips
- · Cotton balls (gauze can damage strip and provide false reading)
- · Alcohol prep
- · Finger lancet
- · Normal Saline IV if altered LOC or suspected life threatening illness / injury

Obtain blood sample from:
- · IV site
- · IV catheter
- · Capillary bed via lancet puncture
- · Draw red top vacutainer blood sample if IV administered

Apply sample to test area of glucometer or reagent strip

Glucometer

Follow Manufacturer's Instructions

Take digital reading

Reagent strips

Allow 60 seconds for strip development

Blot reagent strip with cotton ball

Allow additional 60 seconds for strip development

Take visual comparison reading with color scale

Is reading < 80mg/dl?

Yes

Administer:
- · D50%W 25g IV or 25g of oral glucose
- · Repeat reading in 5 minutes

No

- **· Assure adequate oxygenation**
- **· Assess patient for other causes of illness / injury**

EMERGENCY PROTOCOL
11.g NASOTRACHEAL INTUBATION

Contraindications:
- Apnea
- Suspected facial or anterior or basilar skull fractures

Gather necessary equipment:
- Bag Valve Mask (BVM) with clear face mask and Oxygen source
- Suction with tonsil tip and French suction catheters
- Appropriate size(s) ET Tubes
- Neo-synephrine nasal spray
- Pulse oximeter and cardiac monitor

- Hyperventilate patient @ 18-20/min ≥ 3 min prior to intubation
- Assure Normal Saline IV @ TKO (maintain systolic BP>110mmHg)
- Evaluate pulse oximetry and cardiac monitor for changes

↓

Position patient in neutral position

↓

Administer:
- Neosynephrine 1-2 sprays per nare

Consider:
- Cetacaine 1-2 sprays per nare
- Xylocaine jelly on distal end of ET tube

↓

Insert ET tube into desired nare and advance slowly until positioned at glottic opening

↓

Quickly advance ET tube through vocal cords upon inspiration

↓

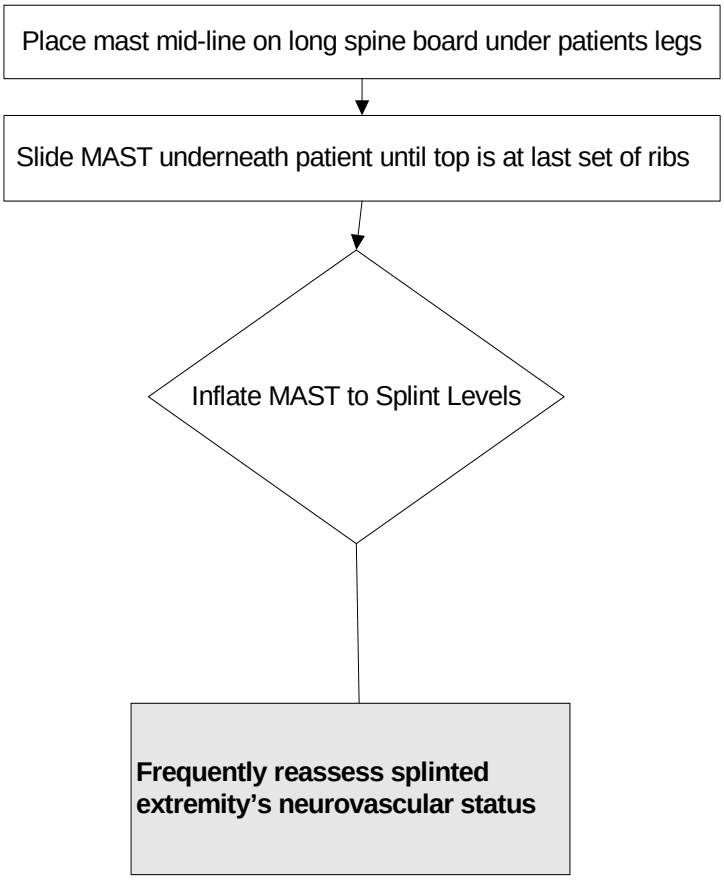
Securely hold ET tube
Attach CO_2 detector or EDD and auscultate breath sounds to confirm ET Tube placement

↓

- Hyperventilate patient @ 18-20/min
- Evaluate pulse oximetry and cardiac monitor for changes

EMERGENCY PROTOCOL
11.h MAST TROUSERS (Adult Only)

Indications:	Contraindications:
· To stabilize pelvic and lower extremity fractures	· CHF / pulmonary edema · Uncontrolled hemorrhage above diaphragm · Penetrating abdominal or thoracic trauma



EMERGENCY PROTOCOL

11.i ADMINISTRATION OF BLOOD PRODUCTS (Adult Only)

REQUIREMENTS

Patient is accompanied in the patients compartment by a Paramedic, registered nurse, or physician trained in these procedures.

Prior to initiating transportation the physician will provide the Paramedic with written medical orders for the treatment of any adverse reaction(s) the patient might have.

At least epinephrine, Benadryl, and a suitable diuretic should be available in the patient compartment.

Paramedic must have specific training, and the ambulance service must maintain a record of all personnel completing this specialized training.

PRIOR TO TRANSFUSION

Check that room storage did not exceed thirty (30) minutes.

Carefully check blood type for compatibility with the patient

Check vital signs

Run the blood through at least an 18 gauge IV catheter or larger with the blood hung 3-4 feet above the patient.

Flush the IV line Normal Saline prior to beginning the transfusion.

Administer·blood only with Normal Saline fluid.

Initiate the transfusion at a rate of 50 ccs/hr for the first 10 minutes then as ordered by the referring physician.

DURING THE TRANSFUSION

Monitor vital signs and patient condition closely.

Mix the blood should by inverting the bag occasionally.

After the transfusion is completed, flush the IV tubing till clear with Normal Saline and maintain the IV as ordered by the referring physician.

IS THERE AN ADVERSE REACTION:

Circulatory Overloading: - Dyspnea, increase in blood pressure, and jugular vein distention.

Febrile Reaction - Chilling, fever, headache, flushing, tachycardia, and anxiety.

Septic Shock: Chilling,fever, headache, tachycardia, and hypotension.

Immunologic Reaction: -Flushing, itching, rash, urticaria, and asthmatic wheezing.

Acute Hemolytic Reaction -Severe reaction which may cause back pain, dyspnea, hypotension, diaphoresis, cold skin, jugular vein distention, disseminated intravascular coagulation, and death

Yes

IF A REACTION OCCURS

1. Terminate the transfusion immediately.
2. Initiate the treatment ordered by the referring physician
3. Establish Medical Control as soon as possible.
4. Save the donor blood for testing at the receiving facility.
5. If patient condition permits, draw venous blood in a purple top tube from another peripheral site for evaluation at the receiving facility.

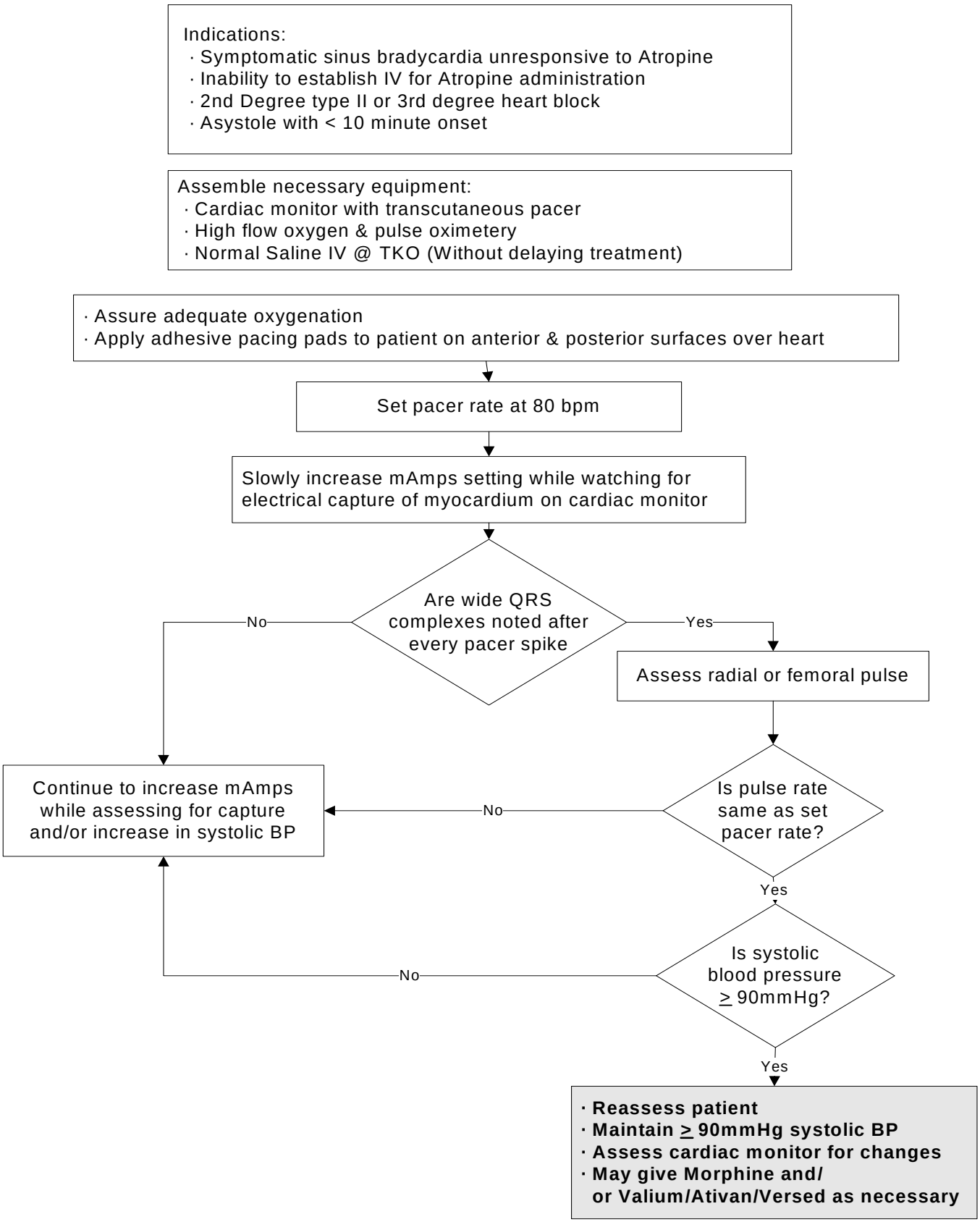
No

AFTER THE TRANSFUSION

Flush the IV tubing till clear with Normal Saline and maintain the IV as ordered by the referring physician.

EMERGENCY PROTOCOL

11.j EXTERNAL CARDIAC PACING (Adult Only)



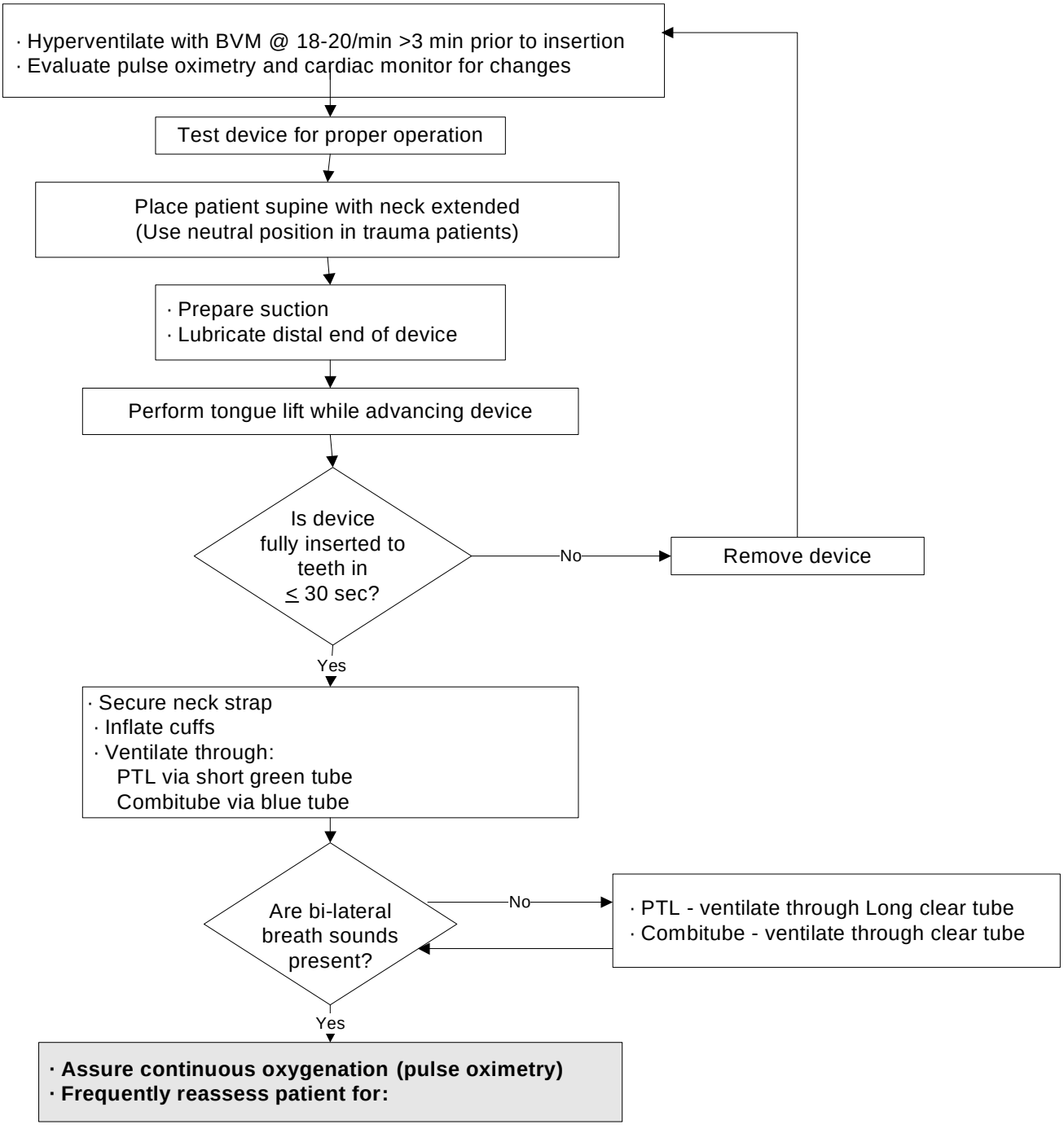
EMERGENCY PROTOCOL

11.K PTL / COMBITUBE INSERTION (Adults Only)

INDICATIONS:
- Apnea
- Absence of protective gag reflex
- Inability to endotracheal intubate

CONTRAINDICATIONS:
- Patient <5 feet tall or >7 feet tall or < 16 years old
- Caustic substance ingestion
- Present gag reflex or esophageal disease

Necessary equipment:
- PTL® / Combitube®
- Bag Valve Mask (BVM) with clear face mask and Oxygen source
- Water soluble lubricant
- Appropriate sized oral airways
- Pulse oximeter and cardiac monitor



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- Caustic substance ingestion
- Present gag reflex or esophageal disease

Necessary equipment:
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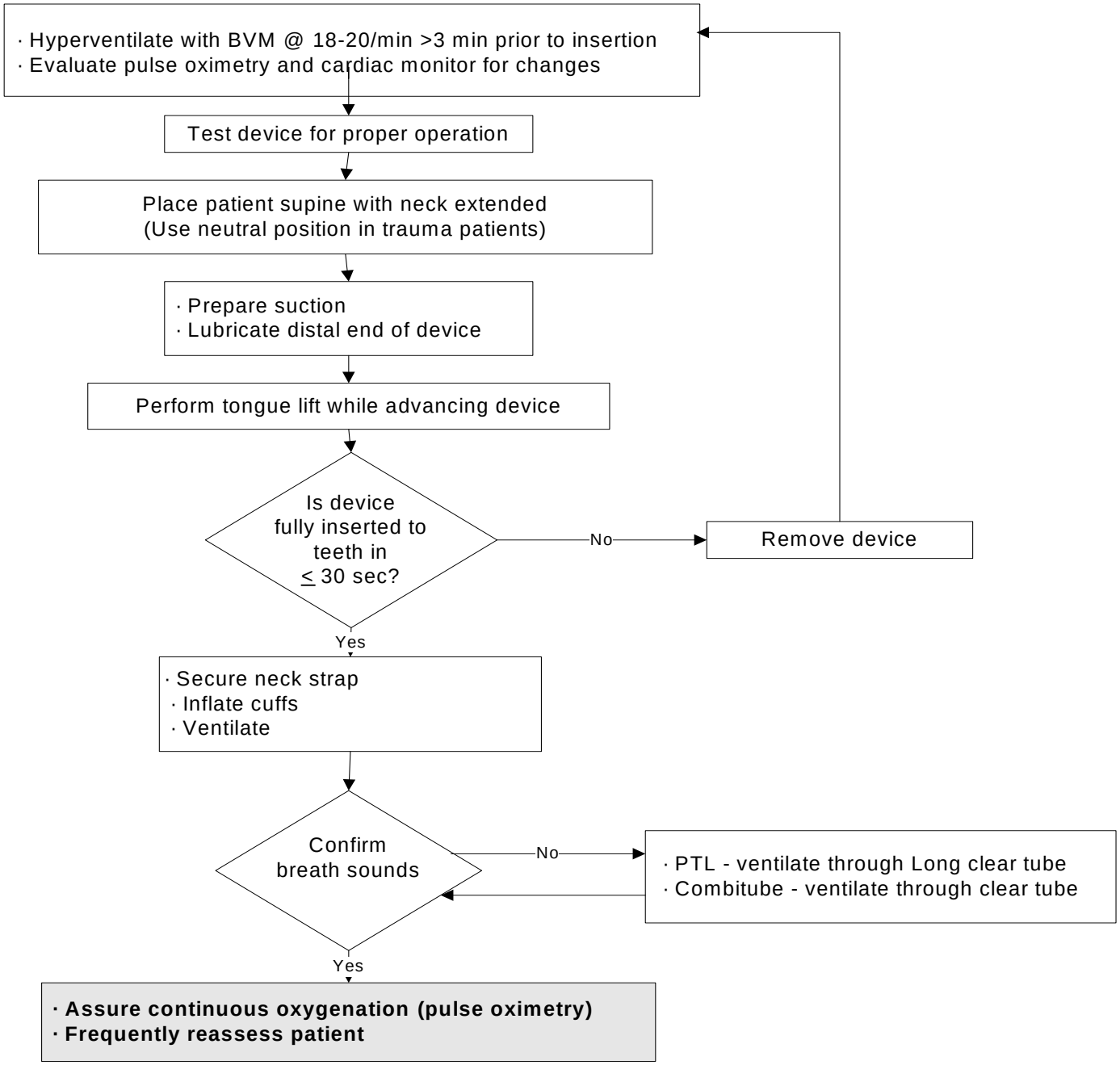
- Water soluble lubricant
- Appropriate sized oral airways
- Pulse oximeter and cardiac monitor



11.L Pulse Oximetry

A. Pulse Oximetry – Assessment

Pulse Oximetry is not without limits and must NOT be used to supercede other assessments.
The Fire Fighter Paramedic shall treat the patient and NOT the pulse oximeter's display. The patient's other key signs and symptoms must be assessed and evaluated so that the oximeter's readings are interpreted within the context of the patient's overall condition.

The percentage of oxygen saturation measured by an oximeter only reflects the supplied pulmonary oxygenation and is not an indicator or measure of cellular oxygenation. Furthermore, it is useful both in the assessment of the patient and as an adjunct for evaluating the effectiveness of the airway management, ventilation, and oxygen enrichment provided.

Oxygen saturation pressure (SpO2) is a different measurement than the partial pressure of oxygen (PaO2) which is commonly measured by laboratory blood gas analysis.
Pulse Oximetry should be deferred until more urgent assessment and care priorities have first been resolved.
Pulse oximetry is a diagnostic tool that, along with the patient's vital signs, chief complaint, mental status, and other considerations, may assist us in determining the patient's respiratory status.
The pulse rate determined by the pulse oximeter is not an accurate indicator of the patient's pulse rate.

Falsely low readings may occur in the following:
a. patients with cold extremities or hypothermic patients
b. patients with hemoglobin abnormalities
c. patients without a pulse
d. hypovolemic patients
e. hypotensive patients

Falsely normal or high oxygen saturation readings may occur in the following patients:
a. anemic patients, carbon monoxide poisoning
b. cyanide toxicity which is being treated with the antidote
c. very bright lighting (direct sunlight or nearby strong lamp)

Other factors affecting accurate readings:
a. patient movement
b. action of vasopressor drugs
c. peripheral vascular disease
d. elevated biliruben levels
e. abnormal hemoglobin values
f. IV diagnostic die has been administered in the last 24 hours

Pulse Oximetry – Values

Normal	96 - 100%	
Mild Hypoxia	91 – 95 %	Treatment – Supplement Oxygen
Moderate Hypoxia	86 – 90 %	Treatment - non-rebreather mask, 12 – 15 lpm,
Severe Hypoxia	< 85 %	Treatment - assist ventilations with adjunct and bag-valve-mask @15 lpm,

11.m Procedure for patients that require physical restraint:

All Patients:

1. Safety of fire department personnel is the main priority in any situation where a patient exhibits aggressive or combative behaviors and needs to be restrained.

2. Use the minimum amount of force and restraint necessary to safely accomplish patient care and transportation with regard to the patient's dignity. Avoid unnecessary force.

3. Assure that adequate personnel are present and that police assistance has arrived, if available, before attempts to restrain patient.

4. Plan your approach and activities before restraining the patient.

5. Have one fire department person talk to and reassure the patient throughout the restraining procedure.

6. Approach with a minimum of four persons, one assigned to each limb, all to act at the same time.

7. Initial take down may best be accomplished, leaving the patient in the prone position. After restraint, the patient should be placed in a supine position.

8. Call for additional help if patient continues to struggle against restraint.

9. Restrain all 4 extremities with patient supine on stretcher.

10. Use soft restraints to prevent the patient from injuring him or herself or others.

11. A police officer or other law enforcement personnel shall always accompany a patient in the ambulance if the patient has been restrained.

12. Do not place restraints in a manner that may interfere with evaluation and treatment of the patient or in any way that may compromise patient's respiratory effort.

13. If the patient is spitting, may cover his/her face with a surgical mask or with a NRB mask with high flow oxygen.

14. Evaluate circulation to the extremities frequently.

15. Thoroughly document reasons for restraining the patient, the restraint method used, and results of frequent reassessment.

Possible Medical Command Orders:

Medical command may order restraint and transport of a patient against his/her will.

Notes:

1. Verbal techniques include:
   a. Direct empathetic and calm voice.
   b. Present clear limits and options.
   c. Respect personal space.
   d. Avoid direct eye contact.
   e. Non-confrontational posture.

2. There is a risk of serious complications or death if patient continues to struggle violently against restraints. Chemical restraint by sedation by ALS personnel may be indicated in some circumstances as directed by ALS protocols or by order from medical command physician.
3. Initial “take down” may be done in a prone position to decrease the patient’s visual field and stimulation, and the ability to bite, punch, and kick. After the individual is controlled, he/she shall be restrained to the stretcher or other transport device in the supine position.
4. **DO NOT** restrain patient in a hobbled, hog-tied, or prone position.
5. **DO NOT** sandwich patient between devices, such as long boards or Reeve’s stretchers, for transport. Avoid restraint to unpadded devices like backboards.
6. A stretcher strap that fits snuggly just above the knees is effective in decreasing the patient’s ability to kick.
7. Padded or leather wrist or ankle straps are appropriate. Handcuffs and plastic ties are not considered soft restraints.
8. Never apply restraints near the patient’s neck or apply restraints or pressure in a fashion that restricts the patient’s respiratory effort.
9. Never cover a patient’s mouth of nose except with a surgical mask or a NRB mask with high flow oxygen. A NRB mask with high flow oxygen may be used to prevent spitting in a patient that also may have hypoxia or another medical condition causing his/her agitation, but a NRB mask should never be used to prevent spitting without also administering high flow oxygen through the mask.

Performance Parameters:

A Documentation of reason for restraint and restraint method used. Review of every call when physical restraint is used.

B. Review for documentation of frequent reassessment of vital signs, cardiopulmonary status, and neurovascular status of restrained extremities. Benchmark of documenting of these items is at least every 15 minutes

11.n STRETCHERS

The following conditions require patients to be transported by stretcher or stair chair:

1. Pregnant greater than 20 weeks
2. Possible cardiac chest pain
3. Shortness of breath
4. Asthma
5. Chronic Obstructive Pulmonary Disease
6. Stroke
7. Patients requiring spinal immobilization
8. Penetrating trauma to the torso, neck, head
9. Lower extremity, pelvis trauma
10. Low back trauma
11. Unconscious, unresponsive patients
12. Seizures within past hour or actively seizing
13. Generalized weakness
14. Patients unable to ambulate secondary to pain or weakness
15. Altered level of consciousness, except psychiatric patients
16. Psychiatry patients requiring restraint

11.o

Spinal Immobilization Protocol

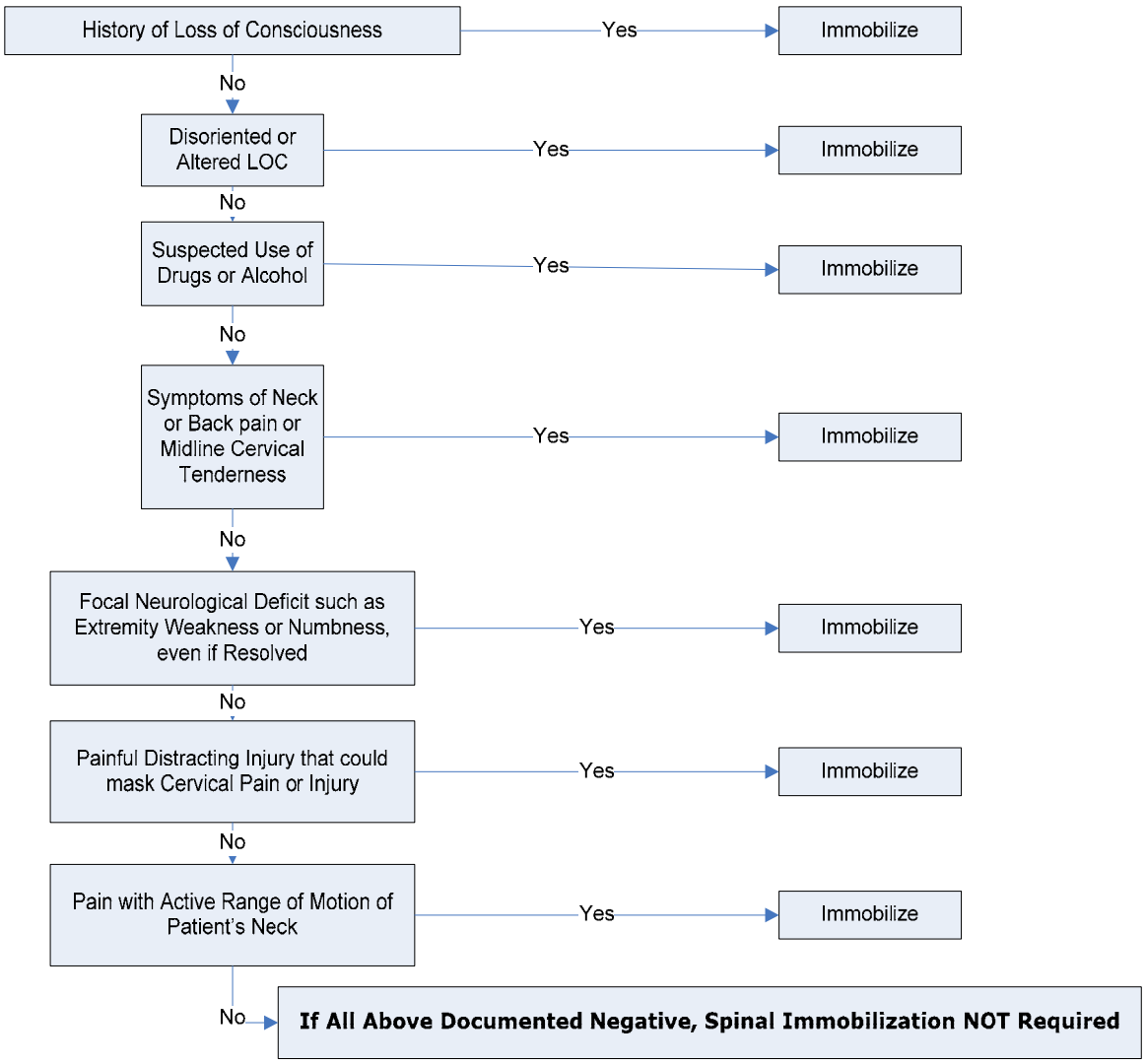
If patient presents with a mechanism which could cause spine injury and meets ANY of the following criteria, complete Spinal Immobilization (C-spine and back) should occur.

Mechanism of injury consistent with potential for spinal injury, including:

- ❑ Any fall from standing or sitting with evidence of injury above the clavicles.
- ❑ fall from a height (above ground level).
- ❑ Any MVC crash (except a low speed mechanism such as a simple rear end MVC, without rollover or ejection and minimal to no vehicular damage)
- ❑ Any trauma where victim was thrown or struck at high speed (e.g. pedestrian accident or explosion).
- ❑ Any lightning or high voltage electrical injury.
- ❑ Any axial load type injury as might be sustained while swimming/ diving or an acute submersion event, where diving may have been involved.
- ☐ Penetrating Trauma to the thorax when bullet track may involve spine

OR

Any unknown or possible mechanism of injury when the history from patient or bystanders does not exclude the possibility of a spine injury



11.o

IF PATIENT IS UNABLE TO COMMUNICATE OR APPROPRIATELY RESPOND TO THE ABOVE QUESTIONS, PERFORM COMPLETE SPINAL IMMOBILIZATIION.

Notes:

1. Beware - minimal trauma may lead to spinal fractures in patients with history of Rheumatoid Arthritis, severe osteoarthritis, Down's Syndrome, cancer, prior cervical spine surgery, history of spinal stenosis or ankylosing spondylitis. If these patients meet the criteria for spinal immobilization, they should be immobilized even if their mechanism was relatively minor (e.g. heavy lifting or twisting).

2. Maintain patent airway while maintaining C-spine stabilization. Use jaw-trust if needed. Consider nasopharyngeal or oropharyngeal airway if decreased LOC and no gag reflex. Nasopharyngeal airways are relatively contraindicated if midface fractures are suspected.

3. If spinal immobilization is indicated by any of these clinical criteria, a rigid cervical collar should be applied immediately, and cervical spine stabilization should be continued until the patient has been immobilized with a padded long spine board and cervical immobilization device. A full-body vacuum splint may be used in place of a long spine board and C.I.D. In children < 2 years, because of the relatively large occiput, neutral positioning of the head and cervical spine may involve placing a shoulder pad.

4. If the patient is in a seated position, a short spine board or similar device may be used to immobilize the spine during transfer to the long spine board.

5. Patients without a mechanism of injury with the potential for causing a spinal injury (as listed in the criteria above) or those patients without one of the listed clinical findings and ambulatory on the scene, may have spinal immobilization omitted.

6. During patient assessment, consider signs of spinal cord injury and/or neurogenic shock.

<u>Documentation for Adherence to Protocol:</u>

- ❑ Presence of injury suspicious for cervical spine trauma
- ❑ If cervical spine precautions are withheld or discontinued, all of the above criteria are documented
- ❑ If partial cervical spine immobilization is utilized due to patient's medical condition, document reasons for not utilizing full cervical spine immobilization

11. p E.Z. I.O.

Indications:

1. Intravenous fluid or medications needed AND
2. Peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following:

    - Altered mental status (GCS of 8 or less)
    - Respiratory compromise (SaO2 of 80% or less following appropriate oxygen therapy, and/or respiratory rate <10 or >40/min)
    - Hemodynamically unstable (Systolic BP <90)

3. IV access is preferred, however, I.O. may be considered prior to peripheral IV attempts in the following situations:

    - Cardiac Arrest (Medical or Trauma)
    - Profound hypovolemia with altered mental status

Contraindications:

1. Fracture of the tibia or femur (for tibia insertion) – consider alternate tibia
2. Fracture of the humerus (for humeral head insertion) – consider alternate humerus
3. Previous orthopedic procedures (ex.: I.O. within previous 24 hrs, knee replacement, shoulder replacement)
4. Infection at insertion site
5. Significant edema
6. Excessive tissue at insertion site
7. Inability to locate landmarks

Considerations:

1. Flow Rates: Due to the anatomy of the I.O. space you will note flow rates to be slower than those achieved with I.V. access.

    - Ensure the administration of 10 ml rapid bolus with syringe.
    - Use a pressure bag or pump for fluid challenge

2. Pain: Insertion of the I.O. device in conscious patients causes mild to moderate discomfort and is usually no more painful than a large bore IV. However, fluid infusion into the IO space is very painful and the following measures should be taken for conscious patients:

    - Prior to I.O. bolus or flush on a conscious adult patient, SLOWLY administer 20 – 50 mg of 2% Lidocaine.
    - Prior to I.O. bolus or flush on a conscious pediatric patient, SLOWLY administer 0.5mg/kg 2% Lidocaine

Adult Patient: Defined as a patient weighing 40kg or greater

- The adult (blue cap) needle set shall be used for adult patients

Primary Insertion Site: Tibia

- If I.O. access is warranted the tibia shall be the insertion site of choice if possible

Alternate Insertion Site: Humeral Head (adult pt. only)

- If I.O. access is not available via the tibia insertion site due to contraindications or inability to access the site due to patient entrapment and vascular access is imperative the I.O. may be placed in the humeral head

Do Not attempt insertion medial to the Intertubecular Grove or the Lesser Tubercle

Pediatric Patient: Defined as a patient weighing 3 – 39kg

- The pediatric needle set (pink cap) shall be used for pediatric patients
- Use the Broslow Tape to determine pediatric weight
- The only approved site for pediatric I.O. insertion is the tibia

Standing Order: The EZIO may be used if the Indications are met and no Contraindications exist.

Precautions:

1. The E.Z.I.O. is not intended for prophylactic use
2. The E.Z.I.O. infusion system requires specific training prior to use

PreHospital Use of FaceMask CPAP

Guideline Protocol

Indications: Hypoxemia secondary to Congestive Heart Failure, Acute Cardiogenic Pulmonary Edema, and Near Drowning. For relief of Dyspnea secondary to Pneumonia, COPD (Asthma,Bronchitis, Emphysema).

Contraindications: Circumstances in which endotracheal intubations is preferred or necessary to secure a patent airway; circumstances in which the patient does not improve or continues to deteriorate despite CPAP administration.

Assure patent airway.

Administer 100% O2 via appropriate delivery system

Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter (SpO2) reading, cardiac rhythm & ETCO2.

Explain the CPAP procedure to the patient.

Ensure adequate oxygen supply to ventilate device (100% when starting and until SaO2 is >95%).

Place the patient on continuous pulse oximetry

Place the delivery device over the mouth and nose.

Secure the mask with provided straps.

Use 10 cm H2O of PEEP maximum.

Establish INT or IV of Normal Saline KVO only

If patient's anxiety level prevents patient from tolerating the device, consider anxiolytics

Check for air leaks.

Monitor and document the patient's respiratory to the treatment.

Continue to coach patient to keep mask in place and readjust as needed.

Consider additional medications as indicated (beta agonists, nitroglycerine, etc)

Begin immediate transport if not already done so.

Contact Medical Control for further orders or suggestions if needed.

I1. Drug Index (Adult)
(See EMS Protocols for Further information)

DRUG:	Activated Charcoal
TRADE NAMES:	Actidose - Aqua
	Actidose with Sorbitol
DOSAGE:	1-2 g/kg body weight

DRUG:	Adenocard
TRADE NAME:	Adenosine
DOSAGE:	6-12 mg drip IVP over 1-3 seconds followed by rapid flush of 5-10 ml NS. Drug is metabolized in less than 10 seconds. Use port closest to patient and flush with 5-10 ml NS bolus, Injecting immediately after drug administration. Opening IV to flush *not* adequate.

DRUG:	Albuterol Sulfate
TRADE NAMES:	Proventil, Ventolin, Albuterol Sulfate
DOSAGE:	Aerosol Nebulization: 2.5 mg every 10-20 minutes, Inhalation Aerosol: 2 puffs every 4-6 hours

DRUG:	Ipratropium Bromide
TRADE NAMES:	Atrovent
DOSAGE:	2 puffs from inhaler 3-4 times per day 500 mcg may be combined with albuterol nebulized medications

DRUG:	Atropine
TRADE NAMES:	Atropine
DOSAGE:	1.0mg IV Bolus q 3-5min.Total Dose: 0.04 mg/kg (3 mg in adult). Endotracheal Dose: Use 2 mg diluted in10 cc water.

DRUG:	Calcium Chloride
DOSAGE:	5cc -10 cc(500 mg- 1 gm.) of 10% solution (4.5 mEq) every 10 minutes slowly. For prophylaxis of Ca channel blockers, use 1/4th the dose.

DRUG:	Dextose, 50%
TRADE NAMES:	D50, D50W
DOSAGE:	2-50 g Bolus

DRUG:	Diazepam
TRADE NAME:	Valium
DOSAGE:	5-10 mg slow IVP, titrated to effect

DRUG:	Diphenhydramine
TRADE NAMES:	Benadryl
DOSAGE:	25-50 mg orally, IM, or slow IVP.

I2. EMERGENCY DRUG DOSE CHART

LIDOCAINE/PROCAINAMIDE

1 gram Meds/250 ml D5W = 4 mg./ml. Always use 60 gtt. set.

1 mg/min = 15gtt/min
2 mg/min = 30 gtt/min
3 mg/min = 45 gtt/min
4 mg/min = 60 gtt/min

Pediatric - Lidocaine - Procainamide (always use 60 gtt. set)

Wt in kg x 120 mg = ___mg in 100cc D5W, then
1cc/hr = 20 mcg/kg/min

DOPAMINE

200 mg/250 ml D5W = 800 micrograms (mcg)/ml.) Always use 60 gtt. set.

50 kg patient = 110 lbs	2 mcg/kg/min = 8 gtt/min 5 mcg/kg/min = 19 gtt/min 10 mcg/kg/min = 38 gtt/min 20 mcg/kg/min = 75 gtt/min	
75 kg patient = 165 lbs.	2 mcg/kg/min = 11 gtt/min 5 mcg/kg/min = 28 gtt/min 10 mcg/kg/min = 56 gtt/min 20 mcg/kg/min = 113 gtt/min	
100 kg patient = 220 lbs.	2 mcg/kg/min = 15 gtt/min 5 mcg/kg/min = 38 gtt/min 10 mcg/kg/min = 75 gtt/min 20 mcg/kg/min = 150 gtt/min	

Pediatric - Dopamine (always use 60 gtt. set)

Wt in kg x 6 mg = ___mg in 100cc D5W, then
1cc/hr = 1mcg/kg/min

Pediatric - Epinephrine (always use 60 gtt. set)

Wt in kg x 0.6 mg = ___mg in 100cc D5W, then
1cc/hr = 0.1mcg/kg/min

EMERGENCY FLUID THERAPY GUIDELINE

If the Paramedic feels that an intravenous line will be necessary in the treatment of the patient, he or she may establish an appropriate peripheral IV with the appropriate size catheter and fluid prior to contacting Medical Control. The hands and forearms are preferred sites. In the event that an IV cannot be established and the IV is considered critical for the care of the patient, other peripheral sites may be used, i.e., feet, legs, external jugular, or intraosseous infusion. EXTERNAL JUGULARS AND INTRAOSSEOUS INFUSION FOR PEDS MAY BE PERFORMED ONLY BE PARAMEDICS TRAINED SPECIFICALLY IN THESE PROCEDURES AND APPROVED BY THE MEDICAL DIRECTOR

I3. GLASGOW COMA AND TRAUMA SCORING
(16 years of age & over)

GLASGOW COMA SCALE		TRAUMA SCORE		
Eye opening		total	14-15	5
spontaneous	4	glasgow coma	11-13	4
opening to voice	3	scale	8-10	3
response to pain	2	from	5-7	2
none	1	above	34	1
Verbal		respiratory		
oriented	5	*10-24/mm*		4
verbal confused	4	25-35/min		3
inappropriate words	3	36/min or greater		2
incomprehensible sounds	2	1-9/min		1
none	1	none		0
Motor		respiratory		
obeys command	6	normal expansion		1
localizes pain	5	retractive		0
withdraws (pain)	4			
flexion	3			
extension	2			
none	1			
		capillary refill		
		normal		2
		delayed		1
		none		0
TOTAL apply to Trauma Score	3-15	systolic		
		90 mm Hg or greater		4
		70-89 mm Hg		3
		50-69 mm Hg		2
		0- 49mmHg		1
		none		0

TOTAL TRAUMA SCORE 1-16

While the Trauma Score does NOT determine patient destination, it may be helpful in the overall management of trauma patients.

I4. TRAUMA SCORE

The Trauma Score is a numerical grading system for estimating the severity of injury. The score is composed of the Glasgow Coma Scale (reduced to approximately one third total value) and measurements of cardiopulmonary function. Each parameter is given a number (high for normal and low for impaired function). Severity of injury is estimated by summing the numbers. The lowest score is 1, and the highest score is 16.

TRAUMA SCORE - OPERATONAL DEFINITIONS

RESPIRATORY RATE
Number of respirations in 15 seconds; multiply by four.

RESPIRATORY EXPANSION
Retraction - use of accessory muscles or intercostal muscle retraction.

SYSTOLIC BLOOD PRESSSRE
Systolic cuff pressure; either arm - auscultate or palpate
No pulse - No carotid pulse

CAPILLARY REFILL
Normal -nailbed, forehead, or lip mucosa color refill in 2 seconds or time taken to mentally repeat capillary refill
Delayed -more than 2 seconds capillary refill
None -no capillary refill

BEST VERBAL RESPONSE
Arouse patient with voice or painful stimulus.

BEST MOTOR RESPONSE
Response to command or painful stimulus.

Project estimate of survival for each value of the Trauma Scored based on results from 1,509 patients with blunt or penetrating injury.'

TRAUMA SCORE	PERCENTAGE SURVIVAL
16	99
15	98
14	96
13	93
12	87
11	76
10	60
9	42
8	26
7	15
6	8
5	4
4	2

Champion, HR; Reported in National Center for Health Services Research.

TRAUMA SCORE

RESPIRATORY	1-24 per min.	4
RATE	24-35 per min	3
	36/min or greater	2
	1-9/min.	1
	None	0
RESPIRATORY	Normal	1
EXPANSION	Retractive	0
SYTOLIC	90 mm Hg or Greater	4
BLOOD	70-89mmHg	3
PRESSURE	50-69 mm Hg	2
	0-49 mm Hg	1
	No Pulse	0
CAPILLARY	Normal	2
REFILL	Delayed	1
POINTS TO ADD TO THE RTS BASED ON THE GCS		
14-15		5
11-13		4
8-12		3
5 - 7		2
3 - 4		1

I5. APGAR SCORING SYSTEM

ICLINICAL SIGN	0 POINTS	1 POINT	2 POINTS
A - APPEARANCE	Blue/Pale	Body Pink Extremities Blue	Completely Pink
P - PULSE	Absent	Below 100/minute	Above 100/minute
G - GRIMACE	No response	Grimace	Cries
A - ACTIVITY	Limp	Some flexion of extremities	Active Motion
R - RESPIRATORY	Absent	Slow/Irregular	Good strong cry

The Apgar Score should be calculated after delivery of the infant. The five (5) clinical signs are evaluated according to the scoring system detailed above. Each sign is assigned points to be totaled. A total score of 10 indicates that the infant is in the best possible condition. A score of 4 to 6 indicates moderate depression and a need for resuscitative measures. See Page 69

I6. INDEX of PEDIATRIC INFORMATION

Normal Age	**Normal Weight(kg)**	**Diastolic BP**	**Systolic BP**	**Heart Rate/Min**	**Respiratory Rate/Min**
Birth	3.5	55-70	65-90	110-160	30-60
6 mos..	7	55-70	70-105	100-140	30-50
1 yr(s)	10	55-75	80-105	100-140	25-35
2	13		80-105	90-110	20-30
4	1		90-110	80-110	15-30
6	23		90-110	70-100	15-30
8	28	60-75	90-110		
9-10"..	30	65-75	90-115	70-90	10-20
11-12"	37	65-80	90-120		
13-15"	50	65-80	110-125	60-80	10-20
16-18"	65	65-90	110-135		

Drip Infusion

0.1 mcg/kg/min = 1 mg/100ml @ 2/3 BW (kg) ml/hr
1.0 mcg/kg/min = 6 mg/100 ml @ BW (kg) ml/hr
5.0 mcg/kg/min = 30 mg/100 ml @ (kg) ml/hr
20 mcg/kg/min = 120 mg/100 ml @ (kg) ml/hr
4

Size ETT = 16 + (yrs)

OR

0.1 mcg/kg/min Add (0.6 x BW (kg) to 100 ml and infuse at 1 ml/hr
1 mcg/kg/min Add (6 x BW (kg) mg to 100 ml, and infuse at 1 ml/hr

Emergency Pediatric Drug Doses

Resuscitation

Oxygen …… 100% 02
Fluid Bolus ……. 20 ml/kg NS/LR/Colloid IV push
Defibrillation ……. V Fib - 2 watt-sec/kg (if unsuccessful, double voltage & repeat)
Cardioversion ……. V-Tach/SVT-0.5 watt-sec/kg (if unsuccessful, double voltage & repeat)
Atropine …… 0.02 mg/kg IV/IM/ET (min 0.1 mg) (max: 0.5 mg child/1.0 mg adolescent) may repeat x 1
Bicarbonate …….. 0.5-1 mEq/kg IV (repeat prn)
Calcium Chloride ……. (10%) 10-25 mg/kg Ca IV slow push = 0.2-0.3 ml/kg CaCl (Max 500 mg)
Ca Gluconate (10%) … 100 mg/kg slow IV
Epinephrine …….. Bradycardia: 0.01 mg/kg (1:10,000) IV/IO; 0.1 mg/kg (1:1000) ET, Repeat q 3-5 min
…….. Asystole: 0.01 mg/kg (1:10,000) IV/IO; 0.1 mg/kg (1:1000) ET; 2nd dose:
…….. 0.1-0.2 mg/kg (1:1000) IV/IO/ET repeat q 3-5 min
Glucose …… 0.5-1 gm/kg = 2-4 ml/kg D25W IV push (use D10W for neonates)
…….. (consider continuous infusion at 8 mg/kg/min)
Lidocaine …… 1-2 mg/kg IV bolus, then 20-50 mcg/kg/min IV drip
Naloxone (Narcan) ….. 0.1 mg/kg IM/IV/ETT (min: 0.5 mg) max: 2.0 mg) also sublingually
Flumazenil …… 0.05 mg IV q l min up to 5 doses; children: 0.2 mg IV q 1min up to 3-5 mg total

Cardiovascular

Pressors …… Dobutamine …… 5-20 mcg/kg/min (titrate to effect)
…… Dopamine ……2-5 mcg/kg/min(renal effect); 5-20 mg/kg/min (cardiac effect)
…….. Epinephrine ……0.1-1.0 mcg/kg/min IV (titrate to effect)
…….. Isoproterenol (Isuprel)….. …. 0.1-1.0mcg/kg/min IV(titrate to effect) (keep HR<200 BPM)
…….. Norepinephrine (Levophed) . ….0.1-1.0 mcg/kg/min IV (titrate to effect)
…….. Phenylephrine (Neosynephrine) 0.1 mcg/kg/min IV (titrate to effect)
Vasodilator: …….. Nitroprusside (Nipride) ……. 0.1 mcg/kg/min IV (titrate) (monitor BP)
Other……Adenosine …… 0.1-0.2 mg/kg rapid IV bolus max single dose 12mg

Anaphylaxis

Benadryl …….. 1-2 mg/kg PO/IV/IM (max: 50 mg)
Epinephrine …….. 0.01 ml/kg (1:1000) SC (repeat Q5min prn)
……(For shock, consider IV epinephrine (1:100,000)
-1 ml of epinephrine (1:10,000) with 9 ml of NS. (Push slowly at 2 ml (20 meq))

Anticonvulsant

Diazepam (Valium) …….. 0.1 mg/kg IV slow (max: 5 mg < 5 yrs/10 mg > 5 yrs) PR:0.5 mg/kg
Lorazepam (Ativan) ……. 0.1 mg/kg I/PR (Repeat Q 5 min x 2 prn)
Midazolam (Versed)……..0.10 mg/kg – 0.02 mg/kg

Respiratory

Albuterol …… 0.5 ml in 2.5 ml NS via nebulizer; may repeat q 20hrs x 3 or prn
Epinephrine …… 0.01 ml/kg (1:1000) SC (max: 0.5 ml) may repeat Q15 min)
Prednisone …… 2 mg/kg divided x 5 days PO
Methylprednisone (solumedrol) 1-2 mg/kg/dose every 6 hours IV/IM
Racemic Epinephrine .. Croup: 0.05 ml/kg/dose in 3ml NS by neb (max 0.5 ml/dose) may repeat q 2h

Diuretics

Furosemide (Lasix) …….. 1-2 mg/kg PO/IM/IV
Mannitol …….. 0.25 - 1.0 gm/kg IV (repeat Q2-4hrs)

Intoxication
Activated Charcoal ……. 1 gm/kg PO/NG (in 70% sorbitol solution) max dose: 60gm PO

Steroids
Dexamethasone …….. 0.5-1.5 mg/kg IV/IM for brain tumor
…… 0.25-0.5 mg/kg IV q6h for airway edema
Hydrocortisone (Solucortef).. 25 mg < 1 yr; 50 mg 1-12 yrs; 100 mg adolescent IV/IM
Methylprednisolone(Solumedrol) - 1 mg/kg IV q6hrs

Metabolic
Glucagon …….. 0.5 mg/dose IV/IM (may repeat x 1 after 20min) max dose 1 mg
Insulin …….. 0.1U/kg SC/IV bolus, then 0.1u/kg/hr IV drip (Add glucose when BG < 300)

Analgesics/Narcotics
Acetaminophen …….. 15-20 mg/kg PO/PR Q4hrs
Demerol (Meperidine) …… 1 mg/kg IM/IV Q2-4hrs
Fentanyl …… 1-2 mcg/kg IV Q2-3hrs or 5-40 meg/kg/hr IV drip
…… For conscious sedation may titrate to effect up to 5 meg/kg
Ibuprofen ……. 5-10 mg/kg PO Q 6-8hrs
Morphine ……. 0.05-0.1 mg/kg IM/IC/SC Q2-4hrs

Sedatives/Anesthetics
Benadryl ……. 0.25-0.5 mg/kg IV Q4-6hrs or 1.25 mg/kg PO Q6hrs
Midazolam (Versed) …… 0.1-0.5 mg/kg IV/IM; 0.3-.5 mg/kg PO/PR, IV * titrate to effect
…….. (Consider continuous infusion at 0.5-3.5 meg/kg/min)

Muscle Relaxants
Atracurium …… 0.3-0.5 mg/kg IV
Pancuronium (Pavulon) … 0.1 mg/kg IV
Succinylcholine (Anectine) . . 2 mg/kg IV < 1 yr; 1 mg/kg IV > 1 yr; 5 mg/kg IM
Vecuronium …….. 0.1 mg/kg IV

Age- and Weight-Related Pediatric Equipment Guidelines

Years	Premature	Newborn	6 Months	1-2 Years	5 Years	8-10
	3 kg	3.5 kg	7 kg	10-12 kg	16-18 kg	24-30 kg
C-collars	--	--	Small	Small	Small	Medium
Chest tubes	10 -14 F	12 -18 F	14 -20 F	14 -24 F	20 - 32 F	28-38 F
NG tubes	5 feeding	5-8 feeding	8 F	10 F	10 - 12 F	14-18 F
Foley	5 feeding	5-8 feeding	8 F	10 F	10 - 12 F	12 F
O_2 masks	Premature or newborn	Newborn	Pediatric	Pediatric	Pediatric	Adult
BVM	Infant	Infant	Pediatric	Pediatric	Pediatric	Pediatric or Adult
Laryngoscopes	0	1	1	1	2	2-3
ET tubes/stylets	2.5-3.0/6F	3.0-3.5/6F	3.5-4.5/6F	4.0-4.5/6F	5.0-5.5/14F	5.5-6.5/14F
Suction catherters or stylets	6-8 F	8 F	8 - 10 F	10 F	14 F	14 F
Oral airways	Infant	Infant or small	Small	Small	Medium	Medium or Large
IV equipment	22-24 angio	22-24 angio	22-24 angio	20 -22 angio	20-22 angio	20-22 angio
	25 scalp	23-25 scalp	23-25 scalp	23 scalp	19 scalp	19 scalp
Arm boards	6 in	6 in	6-8 in	8 in	8-15 in	15 in
BP cuffs	Newborn	Newborn	Infant or child	Child	Child	Child or adult

I7

Pre-Hospital Screen for Thrombolytic Therapy

Complete this report for all patients symptomatic for a Myocardial Infarct. Report to the Emergency Department Physician/Nurse the following elements and attach a copy of this form to patient's Ambulance Report (No._____) for all patients that received pre-hospital screening for thrombolytics.

a. Time of onset of symptoms: _____ Patient's Age: _____

b. Vital signs. BP:_____ Pulse: _____ Resp: _____

c. EKG Analysis (By device/EMT-P):_____

d. Medications: _____

YES NO 1. Previously taken anticoagulants? What?_____ Date: _____

YES NO 2. Taking COUMADIN, Aspirin, other blood thinners?
What? _____

e. Current evidence or history of:

YES NO 1. Recent blood in sputum, vomit, stool, or urine (circle).

YES NO 2. Recent brain/spinal cord surgery, CVA, or injury (Date_____)

YES NO 3. Brain/Spinal cord tumor or aneurysm.

YES NO 4. Atrioventricular tumor or heart malformation.

YES NO 5. Prolonged CPR.

YES NO 6. Aortic dissection, arteriovenous malformation, aneurysm.

YES NO 7. Pregnancy (number of months: _____)

YES NO 8. Recent trauma or surgery (What:_____
Date _____)

YES NO 9. Recent biopsies, endoscopies, arterial puncture. Date _____

YES NO 10. Severe, uncontrolled hypertension.

YES NO 11. Bleeding disorder that causes patient to bleed excessively.

YES NO 12. Currently menstruating.

ENSURE THE PHYSICIAN/NURSE ARE AWARE OF ANY OF THE ABOVE LISTED CONDITION

GLOSSARY

TREM	DEFINITION
A.C.L.S.	Advanced Cardiac Life Support.
A.L.S.:	Advanced Life Support.
Abduction:	Motion of a limb away from midline of the body.
Abrasion	Scrape; when the outer layer of skin has been scraped away.
Acetone odor	A sweet fruity smell.
Acid:	A chemical with a pH of < 7.0 that can poison or burn severely. The degree of injury depends on the pH. If it is <2, it is very harmful; if it is >*6,* it is not likely to be harmful. The normal pH of the body is 7.35-7.45.
Adduction:	Movement toward the midline of the body.
Affect:	Feelings; the non-physical component of emotional behavior.
Air embolism:	Air bubbles which occlude the blood vessels.
Airway:	The route through the body that air must take to attain adequate breathing.
Algorithm:	A logical program that diagrammatically depicts a decision tree with discrete cognitive steps.
Alkali:	A chemical with a pH of > 7.0 that can poison or burn severely. The degree of injury depends on the pH. If it is >10, it is very harmful; if it is <8, it is not likely to be harmful.
Alveoli:	The tiny air sacs of the lungs where oxygen is delivered to the blood and carbon dioxide is extracted from the blood to be exhaled by the lungs.
Amphetamine:	A central nervous system stimulant ("upper").
Amputation:	Surgical or traumatic removal of an organ or part of the body
Analgesic:	Medication administered to relieve pain.
Anaphylactic shock	Occurs when an individual who has become sensitized to a substance by previous contact reacts violently; allergic reaction.
Aneurysm	A sac or dilation in a blood vessel; weakened place.
Anterior Surface	Surface which is toward the front part of the body
Apnea:	Absence of breathing.
Areflexia	Absence of all reflex activity
Cerebrovascular accident (CVA)	This is often called a stroke or apoplexy. It refers to the condition in which a portion of the brain suddenly loses its function because of inadequate blood supply.
Chronic obstructive pulmonary disease (COPD):	A term denoting chronic bronchitis, emphysema, and asthma-like illness that cause obstructive problems in the lower airways; generally follows a long smoking history.
CO	Chemical abbreviation for carbon monoxide gas. This gas is a poisonous product of incomplete combustion that is colorless, tasteless, and odorless.
$C0_2$:	Chemical abbreviation for carbon dioxide; atmospheric gas given off naturally as a waste product during exhalation.
Coma	State of unconsciousness from which a patient cannot be aroused, even by powerful stimuli.
Compound fracture	Where the bone end protrudes through the skin surface or there is an open wound extending to the fracture site.
Concussion:	Injury resulting from impact with an object; loss of function, either partial of complete, that results from a fall or blow.
Contraindication	Any condition which renders a particular treatment improper or undesirable.
Contusion:	Bruise.
Convulsion:	Violent, jerky, and purposeless movements caused by the sudden stimulation of large numbers of brain cells.
Crepitus:	A grating or grinding sensation that can be felt when the broken ends of a bone rub together.
Crowning:	State in children when the fetal head presents at the vulva (when the top of the baby's head first appears).
Cyanosis:	Bluish tinge in the color of the mucous membranes and skin due to excessive amounts of reduced hemoglobin in the capillaries.
D50:	Dextrose 50 % concentration

TREM	DEFINITION
D5W:	Dextrose 5 % concentration in Water
Decerebrate	Posture assumed by patients with severe brain dysfunction, characterized by extension and rotation of the arms and extension of the legs.
Decorticate:	Posture assumed by patients with severe brain dysfunction, characterized by extension of the legs and flexion of the arms.
Defibrillation:	Stoppage of fibrillation of the heart done with an electric current briefly passing through the heart, allowing the normal sinus impulse to resume rhythmic control of contraction.
Deformity:	A change from normal appearance.
Deterioration:	The process of worsening; negative change in the patient's condition
Diastolic pressure	Pressure during relaxation of the heart. This is written as the bottom part of the blood pressure.
Diabetes mellitus	A systemic disease affecting many organs, including the pancreas, whose failure to secrete insulin causes an inability to metabolize carbohydrate and consequent elevations in blood sugar.
Diaphoresis:	Profuse inappropriate perspiration
Dilated pupil	The appearance of a pupil (dark part of the eye) being larger than normal
Distal:	Farther from the center of the body
Distention:	Condition of abnormal enlargement, often due to internal pressure.
Dorsal:	In reference to the back of the body.
Drip:	A measured dosage of a drug in solution.
Drug:	Medical substance used in the treatment of disease or condition.
Dura mater:	Thick outer membrane covering the spinal cord and brain.
Dyspnea:	Difficulty or labored breathing.
Dysrhythmia	Abnormal electrical rhythm of the heart.
E.M.S.:	Emergency Medical Service.
ET Tube:	Endotracheal Tube
Edema:	Condition in which the body tissues contain an excessive amount of fluid.
Electrocardiogram (EKG/ECG):	A graphic record of the electrical impulses of the heart.
Embedded:	Stuck or firmly placed in the surrounding matter.
Embolus:	A mass of solid, liquid or gaseous material that is carried in the circulation and may lead to occlusion of blood vessels, with resultant infarction and necrosis of tissue supplied by those vessels.
Emphysema	Infiltration of any tissue by air or gas; a chronic pulmonary disease caused by distention of alveoli and destructive changes in the lung.
Environmental hazards:	Natural or man-made dangers (e.g., fumes, fallen electrical wires, building collapse, traffic, flooding, fire, radiation, crowds).
Epiglottis:	A leaf shaped tissue "valve" guarding the opening of the trachea
Epistaxis:	Nosebleed.
Esophagus:	The gullet tube extending from the pharynx to the stomach.
Etiology:	Cause or origin.
Evisceration:	Where an internal organ of the abdomen is protruding from the body (either remaining attached or cut off from the body completely) as a result of a deep wound.
Exanguinate:	To bleed to death
Extension:	The unbending of a joint in which the angle between the bones is increased.
Femoral artery:	Large blood vessel which originates from the external iliac artery and terminates behind the knee as the popliteal artery.
Fetus:	Unborn offspring (usually 3 months after conception to birth) carried in the uterus
Fibula	Small non weight bearing bone along the lateral surface of the calf.
Fibrillation	Grossly irregular quivering of the heart.
First degree burn	Burn affecting only the outer skin layers; the skin is reddened and no blisters are present.
Flail chest	Condition which occurs when several ribs are broken in two or more places, so that the disconnected section does not rise and fall with the rest of the chest as a person breathes

TREM	DEFINITION
Flexion	The act of bending or condition of being bent, in contrast to extension.
Foreign object:	A piece of matter not naturally found in the area (e.g., a knife in the skin, broken teeth, or hard candy in the mouth)
gtt:	Drop (Measurement in regulating I.V. fluids)
Glasgow coma scale	A measurement tool used to accurately record the patient's level of consciousness(neurologic status) at regular intervals.
Guarding:	Reaction to painful probing, especially in a tender abdominal area; may be the reaction of flinching or protective stiffening of the appropriate muscles.
Hallucinogens	Drugs which induce or cause perception without external stimulation, which may occur in every field of sensation; mind-altering substances, such as LSD
Heat cramps:	Painful muscle cramps resulting from excessive loss of salt and water through sweating
Heat exhaustion	Prostration caused by excessive loss of water and salt though sweating, characterized by cold, clammy skin and a weak, rapid pulse.
Heat stroke	Life-threatening condition caused by a disturbance in the temperature-regulating mechanism, characterized by extremely elevated body temperature, hot and dry skin, bounding pulse, and delirium or coma.
Hematoma:	An abnormal quantity of blood which collects to form a mass.
Hemiplegia:	Paralysis of one-half (right or left) of the body
Hemoptysis	Coughing blood.
Hemophilia	Hereditary blood disease characterized by greatly prolonged coagulation time, in which the blood falls to clot and abnormal bleeding occurs.
Hemorrhage:	Bleeding (either internal or external).
Hemothorax:	Blood in the chest cavity.
High-Fowlers:	Sitting position with back supported at a 90 degree angle.
Hyperextension:	Extreme or abnormal extension
Hyperglycemia:	Abnormally increased concentration of sugar in the blood
Hypertension:	Abnormally high tension, especially high blood pressure.
Hyperthermia	Abnormally increased body temperature.
Hyperventilation	An increased rate and/or depth of respiration
Hypoglycemia:	Abnormally diminished concentration of sugar in the blood
Hypovolemia	Abnormally decreased amount of blood and/or tissue fluids in the body
Hypoxemia:	Low oxygen in blood.
Hypoxia:	Reduction of oxygen in body tissues below normal levels.
I.M.:	Intramuscular.
I.0	Intraosseous.
I.V	Intravenous.
Indications	Reasons for using.
Inferior:	Away from head or upper part of body
Initial patient survey	The routine of tasks and decisions the EMT uses to answer the questions: What is wrong with the patient? What treatment is necessary? What should be done first?
Inspiration:	The act of drawing air into the lungs.
Insulin shock	Severe hypoglycemia caused by excessive insulin dosage with respect to sugar intake, characterized by bizarre behavior, sweating, tachycardia, or coma.
Jaundice:	A condition characterized by yellowing of the skin, sclera of the eyes, mucous membrane, and body fluids, caused by an excess of bilirubin pigment in the body.
Joules:	Watt-Seconds (A measure of energy from defibrillation).
KG	Kilograms (l,OO0 Grams)
L.O.C	Level/Loss of consciousness
L.P.M.:	Liter(s) per minute
Laceration:	A smooth or jagged cut through the skin and blood vessels.
Larynx	Organ of voice ("voice box" or "Adam's apple").
Lateral:	Farther from the midline of body or structure
Level of consciousness	Range of awareness from totally unresponsive to alert.

TREM	DEFINITION
Ligament	Band of flexible, semi-elastic and dense fibrous connective tissue joining bone to bone.
Liter:	Metric unit of volume, equal to 1.056 U.S. quarts.
M.A.S.T.	Military Anti Shock Trousers
M.C.G.(μ)	Microgram (one millionth of a gram)
M.G	Milligram. (one thousandth of a gram)
M.I	Myocardial Infarction
ml.:	Milliliter (one thousandth of a liter)(also a cc)
M.S.D.S	Material Safety Data Sheet
Medial	Nearer the midline of the body or structure
Medical Control	An accountability system for physician supervision of those delegated to perform physician tasks
Microdrop	A measure of fluid (sixty microdrops per cc)
Monoplegia	Paralysis of a single limb or group of muscles
Necrosis:	Death of tissue, usually caused by a cessation of blood supply
Neonate:	An infant less than twenty eight days old.
Oblique	Slanting; diagonal.
Occlude	Cover or close without leakage.
Ocular	Pertaining to the eye.
Orientation	Awareness of time, place, and identity
Oropharynx	Respiratory tract from near the lips to the epiglottis.
Oxygen (0_2):	An odorless, colorless, and tasteless gas produced by vegetation; comprises about 21 % of the atmosphere and is essential for life.
P.R.N.:	Whenever needed
P.V.C.:	Premature ventricular contractions
Palpate	To feel
Paralysis:	Loss of function, resulting from damage to nervous tissue or muscle.
Paraplegic	A victim of paralysis of the lower portion of the body and of both legs.
Pediatric:	A patient over twenty eight days old and less than fifteen years old.
Penetrating injury	An injury produced by an object passing into a body cavity or structure.
Peripheral nervous system	Nervous system components which are not brain or spinal cord
Placenta:	Vascular organ attached to the uterine wall, supplying oxygen and nutrients through the umbilical cord to the fetus; afterbirth.
Pneumothorax	Collection of air in the pleural cavity outside the lung
Posterior	Back side
Prolapsed cord	An umbilical cord which comes out of the vagina before the baby is born.
Prone:	Lying face down.
Prophylactic	Preventing the development or spread of disease; prevents or reduces harmful effects.
Protocol:	Written description of steps to be taken in a treatment sequence.
Proximal	Nearer to the center of the body
Pulmonary edema	Body fluids collecting in the air sacs of the lungs.
Pulse pressure	The difference between the systolic and diastolic blood pressure.
Quadriplegic	A victim of paralysis affecting all four limbs.
Rate:	The number of times something happens in a given period of time. For instance, normal heart rate is 60-80 beats per minute.
Ratio	The numerical relation of one thing to another. For instance, the ratio of males to females in a given population, written as 103:100.
Respiratory distress	Breathing difficulties.
Resuscitate:	Revive from a death-like condition.
Rigidity	A hard board-like feeling.
S.L	Sublingual (under the tongue)
S.Q.:	Subcutaneous beneath the skin).
Second degree burn:	Partial thickness burn penetrating beneath the superficial skin layers, producing edema and blistering.

TREM	DEFINITION
Semi-Fowlers	Sitting position with back supported at about 45 degrees in angle.
Shock:	A state of collapse of the cardiovascular system in which tissue perfusion is lost.
Soft tissue injury	Injury to outer tissue layer, not deep enough to include underlying organs
Sphygmomanometer	An instrument for measuring human blood pressure.
Status epilepticus	Two or more seizures without an interval of complete consciousness.
Stimulus:	Event which produces a reaction or response
Stoma	A surgically-prepared opening, usually in the trachea or bowel.
Subcutaneous emphysema:	A condition to the lung or airway results in the escape of air into the tissues of the body, especially the chest wall, neck, and face, causing a crackling sensation on palpation of the skin.
Subtle	Less obvious; difficult to find.
Superficial:	Pertaining to the surface (usually used in reference to skin).
Supine:	Lying face up.
Supraventricular	Above the ventricle; usually refers to the atrium.
Systole	The contraction phase of the cardiac cycle. Systolic blood pressure is written as the top part of the blood pressure.
T.K.O.:	To keep open. (pertaining to I.V. flow rate)
Tachycardia:	A rapid heart rate, over 100 beats/minute in an adult
Tendon	A fibrous cord by which a muscle is attached to a bone
Tension pneumothorax	Situation in which air enters the pleural space through a one-way valve defect in the lung, causing progressive increase in intrapleural pressure with lung collapse and impairment of circulation
Third degree burn	Full thickness burn, involving all layers of the skin and underlying tissues, having a charred or white, leathery appearance.
Thrombosis	Occlusion or clotting in a blood vessel or in one of the cavities of the heart, formed by deposition of debris and/or coagulation of the blood.
Tibia:	Inner and larger bone of the leg between the knee and ankle
Titrate:	Administration of a medication to produce a desired effect.
Trendelenburg	Supine position with head lower than feet.
Triage	Sorting of casualties to determine the priority of need and proper place of treatment.
Umbilical cord:	Cord connecting the placenta to the fetus within the mother's uterus.
Vascular:	Pertaining to or composed of blood vessels
Visceral:	Pertaining to the covering of an organ; pertaining to the intrabdominal organs.
W.O.:	Wide open (pertaining to I.V. flow rate)
Watt-seconds	A measure of energy used in defibrillation